

Popular Woodworking

Issue #39 October/November 1987

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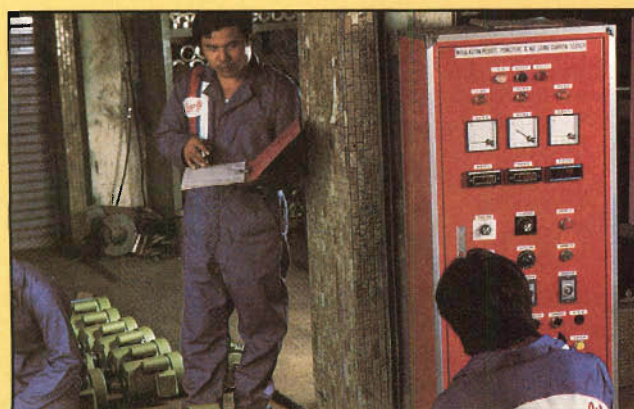
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Popular Woodworking

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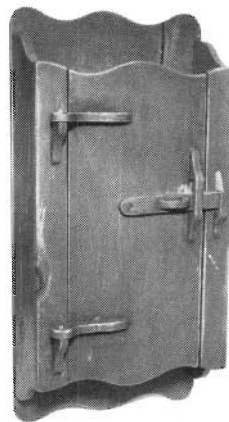
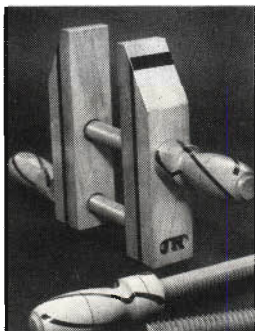
A Popular Woodworking Show Review

The National Hardware Show *by Hugh Foster*

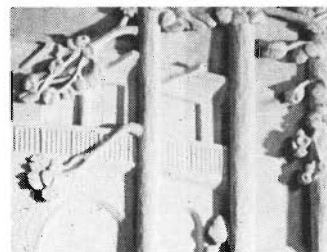
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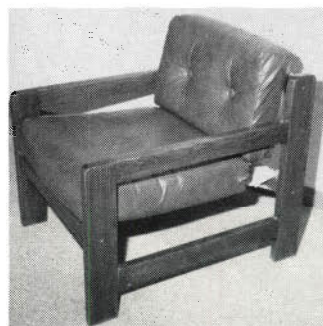
Shop-made tools can be beautiful as well as functional. Jerry Ernce makes clamps for his own use in the shop, and also as gifts for friends. On page 28 he shows you how to make your own so you can increase your supply of clamps without putting the squeeze on your wallet.



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Clear Cuts

At last! A project that will make use of those tiniest scraps of hardwood that you've been hanging on to. With hardwoods costing so much, I have a tough time throwing away anything larger than sawdust (even *that* goes into the garden to make me feel better). If you're like me, then you've got dozens of little pieces of walnut and wenge that are too small to be made into anything - anything, that is, except wooden buttons. On page 32, Reed Povernly shows how to adorn your garments with exotic hardwoods in this low-tech, just-for-fun project.

From scraps that are a little bigger, make yourself some handscrew clamps. Homemade tools always impress me, especially when they look as nice as the ones Jerry Ernce makes. He explains how you can make your own - from scraps, and he even shares a technique for spiral inlay turning which he used for the handles. Turn to page 28 for this useful project - I mean, unless you already have enough clamps.

In case you don't happen to have enough scrap wood for these projects, we've got some bigger projects that will probably leave you with some leftovers. Hugh Foster's "Tall Chest of Drawers" on page 46 involves some half-blind and through dovetails. If you've never cut dovetails you can refer back to our last issue (Aug/Sept 1987) or simply use rabbits instead.

If you like reproducing antiques, John Nelson's "Antique Wall Cupboard" on page 22 is a real charmer. The wooden latch and hinges add to that "country" look, and it's the first project I've seen where part of the finishing process is to "roll it on a peastone walkway."

Then there's Sam Allen's "Simple Seating" on page 40 which will add some basic upholstering skills to your repertoire. He's got a design for chairs and couches which - besides the woodworking - require only a heavy-duty sewing machine and a willingness to try (or a willing seamstress) to complete.

I don't know what to tell you to do with your scrap pieces of fabric, unless you want to make some clothing for your wooden buttons...

In addition to these projects, Bill McMaster is starting a new series in his "Focus on Carving;" this time it's about relief carving. For the next few issues he'll be showing you how to achieve a three-dimensional look on a "two-dimensional" plane.

We're starting a new column called "The Business End" that will provide information about running a woodworking business for those of you who are so inclined. In it you'll find everything from marketing ideas to tax tips to help craftsmen cope with the new tax laws. In this installment, Paul Gerhards talks about selling your wares to retailers at wholesale trade shows.

Another sort of wholesale trade show, the National Hardware Show, took place this summer in Chicago. At this one, tool and hardware manufacturers were showing their merchandise to retailers. Hugh Foster was there, and on page 50 he checks in with a report on what's new.

David M. Camp

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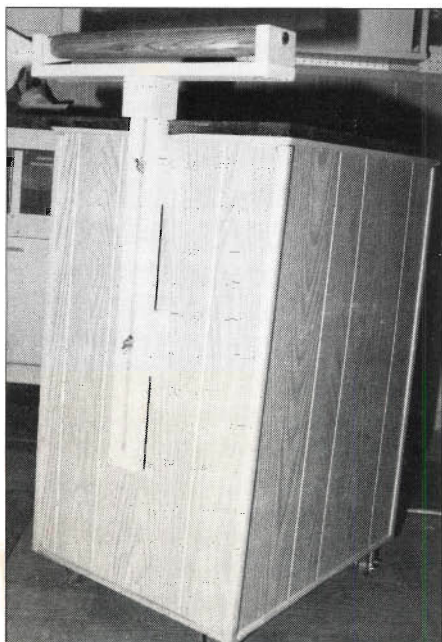
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Space-Saving Roller Stand

I made a roller stand much like the one in Issue #33 ("Make a Roller Stand" by Jacob Schulzinger, Oct/Nov 1986) with a variation that I thought readers might appreciate. As you can see in the photo, I



attached the roller support to the back of a casted cabinet. The vertical slot permits a flexible height adjustment.

Howard E. Robinson
Lakewood, OH

Mallet Check

With reference to the article "An Osage Orange Woodcarver's Mallet" in Issue #37 (June/July 1987), I am interested in techniques for keeping such items from checking or forming radial cracks. The author suggests trimming off end checking before starting, but does not indicate any method for keeping new checks from forming. My experience with larger pieces is that they crack if there is any center left in the turning. Does this not happen with these small diameter

billets? What stage of drying is recommended for wood used for this mallet project?

The dogwood trees are dying in this area, so we have a plentiful supply of small diameter wood with a beautiful, fine grain. Any information available on the use of small wood billets and how to avoid checking would be appreciated.

Rodney T. Swain
Darien, CT

The author replies: Drying lumber is a complex science. I'm hardly an expert, but I will do my best to give it to you straight.

The following method seems to work best for me. I cut the turning billets into 12"-14" lengths with a chain saw. Then I loosely stack them 4" off the floor in a sheltered corner of my unheated shop, out of direct sunlight and away from moisture, so they can season very slowly.

I allow them to dry for at least a year, usually two, regardless of diameter. At the end of that time the wood has dried to a moisture content approaching that of the workshop where it will be turned and used. Any defects that are going to happen will appear during the drying period. Therefore, when I pull a sound billet from the pile, I know it will remain sound. Naturally, I trim away any end checks, cracks, etc. before starting.

The mallets in my article were turned from hardwood limbs that were seasoned for about 18 months. They are approximately a year old now, and show no signs of cracking, even after heavy use. The billet's center (or pith) does not seem to cause checking in my experience.

Checking in mallets turned from wood that is too green can be controlled by storing the mallet in a plastic bag containing a little bit of moisture.

I have also turned handles for lathe tools from similar "firewood" billets with great success—hickory, elm, beech, cherry, walnut, Osage orange, hornbeam, etc.

I suppose the whole secret is not to be in too big of a hurry, and to let your wood season properly before using it.

Dana M. Batory
Crestline, OH

We ran an article back in June/July 1986 (Issue #31) called "Cure Carving Wood Right" by David D. Peck, and in it the author recommended removing the pith from firewood billets and then gluing them back together to season. He explained that because wood shrinks more tangentially (around the log) than it does radially (along the radius), removing the pith releases the past-center pressures that cause checking.

Perhaps Mr. Batory's geographic location, or the species of woods that he's been using account for his good luck. We'd like to hear from other readers who have worked with whole green billets to learn of their experiences.

Editor

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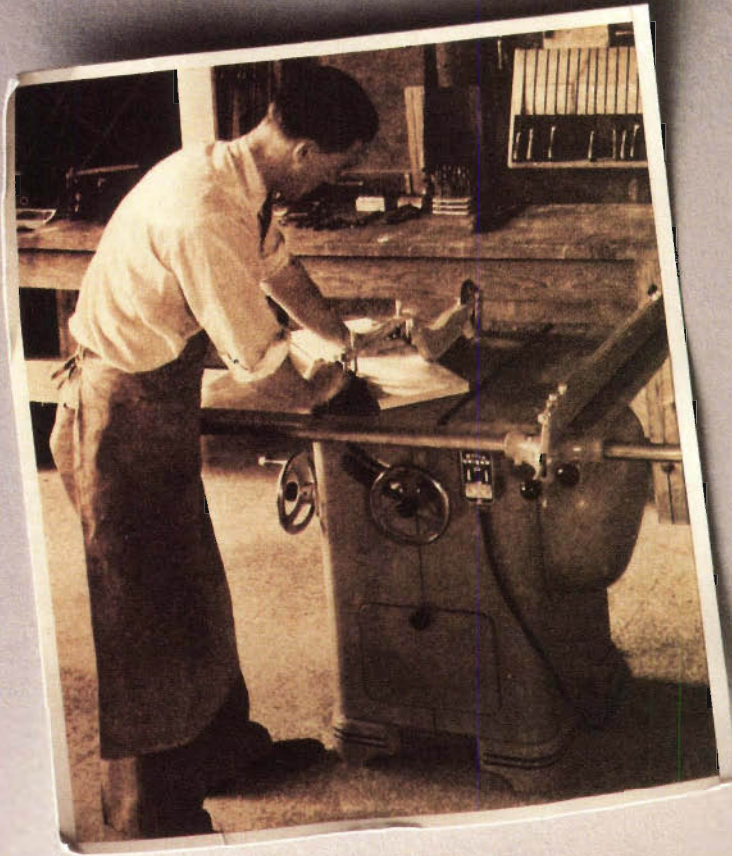
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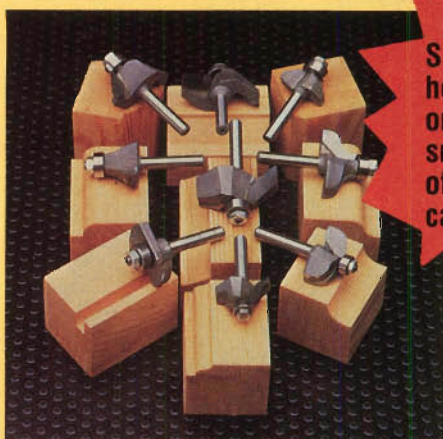
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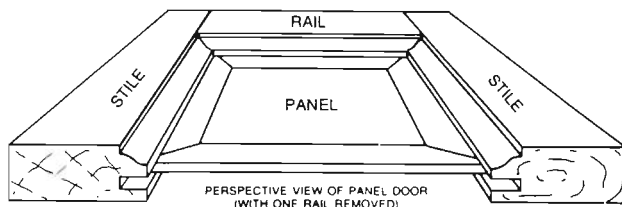
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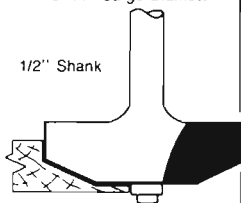
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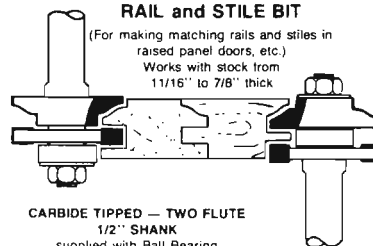


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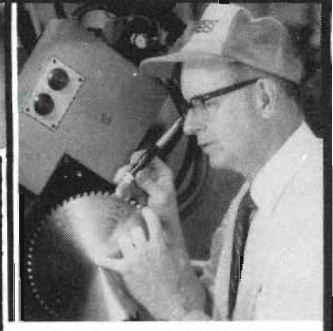
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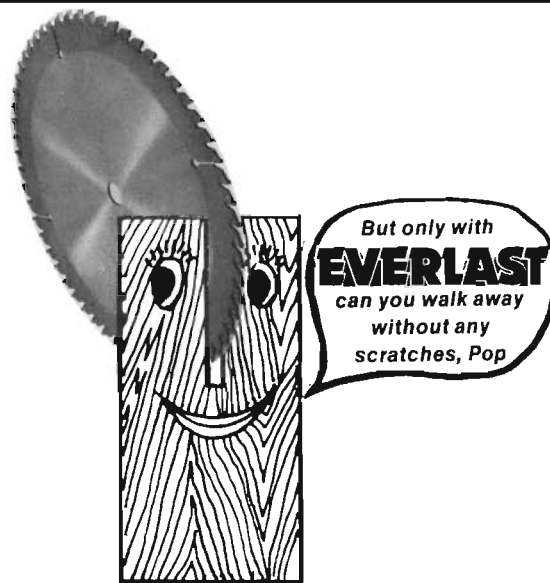
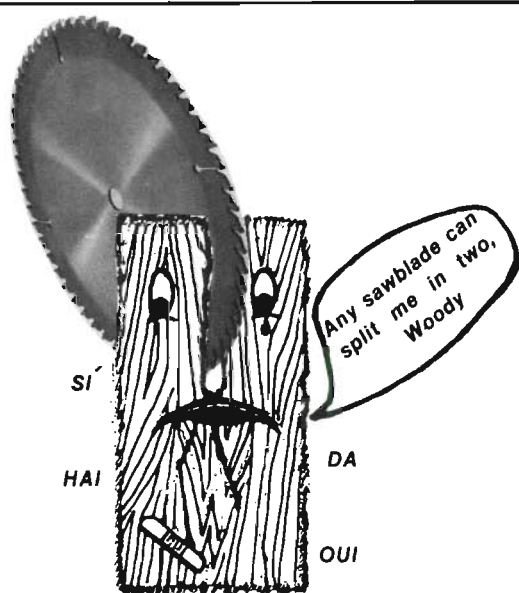
Oil and Oatmeal

Someone over watered the plant that sits on the oiled walnut serving cart. The

water had been on the wood for days when we discovered it. The first thing to hit the water was a paper towel; it was placed straight down and lifted straight up—no wiping was done. To further draw the water out of the wood I applied common household oatmeal (hey, you knew it had to be good for something, didn't you?). I applied fresh oatmeal about three times a day for a couple of days until the carded away oatmeal was absolutely dry. At this stage of the game there was a nasty looking scar on this otherwise gorgeous hunk of walnut. I was really worried.

I went ahead and poured some penetrating oil onto the top, spread it around with my fingers, and then scrubbed it in with 600-grit wet/dry sandpaper. When I dried the piece it looked good. I repeated the process twice that day and once more the next day without scrub sanding. Now the cart looks like new. No home that contains wood furniture should be without oatmeal.

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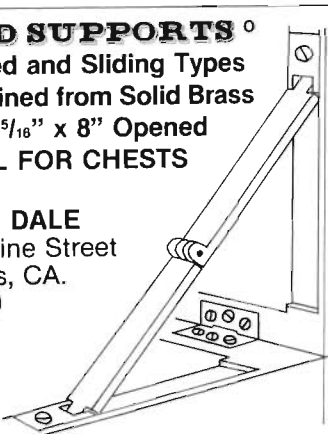
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Mouldings and Turned Woodwork of the 16th, 17th, and 18th Centuries by Tunstall Small and Christopher Woodbridge (Linden Publishing Company, 3845 N. Blackstone, Fresno, CA 93726, ©1987) 92 pp., paperback, \$12.95

Subtitled *A Portfolio of Full-Size Sections*, this book, originally published by the Architectural Press, London, c. 1930, will make a valuable addition to the reference library of anyone who specializes in reproductions of English Period millwork. Sixty pages of plates, mostly cross-section drawings, are identified in charts, but there is no text beyond a few paragraphs of introduction. In the case of spindles and banister rails, we are given the locations of the samples in addition to their measurements; thus we can visit whichever of these sites are extant nearly sixty years after the original publication of this book in order to be sure our work is in proportion. Nearly all the designs here are more graceful and more handsome than currently available lumberyard millwork, and there *may* be some application to the furniture we build; but those observations don't keep me from regarding this handsome, oversized volume as irrelevant to about 99% of the world's woodworkers.

The Home Cabinetmaker: Woodworking Techniques, Furniture Building, and Installing Millwork by Monte Burch (Popular Science Books, Sterling Publishing Company, 2 Park Avenue, New York, NY 10016, ©1987) 537 pp., paperback, \$14.95

This ambitious paperback was first published in 1981 as a hardcover edition by Grolier Book Clubs. Burch is the managing editor of *Workbench* magazine and an accomplished woodworker who has written thirty books and hundreds of articles.

Only 27 of the 537 pages lack photos, drawings or charts. 25 chapters treat everything from the nature of native hardwoods to fasteners, glue, clamps, tools, sharpening, joints, case construction, framing, veneering, laminating, finishing, projects, installing millwork, and going into business.

In a lot of ways, this book reminds me of John L. Feirer's *Cabinetmaking and Millwork*, but Feirer's book seems to me the more thorough and better illustrated, even if it is twice as expensive. Feirer's is one of the handful of books that are kept in my shop, for it contains all the information I need, plus countless jigs. As the opening sentence of this review suggests, I think this book's reach exceeds its grasp. A book like this can help you become a jack of all trades, but its contribution will make you master of none.

Classic Designs for Woodcarving by Richard Adam Dabrowski (Sterling Publishing Company, 2 Park Avenue, New York, NY 10016, ©1987) 96 pp., paperback, \$7.95

The material in this volume was originally published in 1976 and 1979 by Woodcraft Supply Corp. under the titles *Designs for the Woodcarver* and *Advanced Designs for the* **Hugh Foster** is an English-teaching woodworker in Manitowoc, Wisconsin.

Woodcarver, respectively.

Dedicated to Adam Dabrowski, arguably the finest American woodcarver in history, this book features 66 designs for carvers along with some specific thoughts about signmaking and proportional enlargement/reduction. The designs run the gamut from ancient to modern, from Oriental to Occidental, from mystical to art nouveau.

As I recall, I paid about \$10 for each of these books in the late seventies. They were spiral bound and printed on only one side of heavy paper. This volume preserves the page size, but the carver must photocopy any design he might hope to use. Omitted here are most of the photographs from the original, but none of the book's text is missing. Coming in ten years later at less than half the price of the originals, this has to be the carving book bargain of the year. There are pieces here so simple that even I could carve them, and there are pieces that would challenge the likes of Grinling Gibbons. The aspiring or expert carver—and everyone in between—will find plenty of worthwhile and inspiring projects here.

Woodturner's Project Book by Phil Jones & Chuck Mercer (Sterling Publishing Company, 2 Park Avenue, New York, NY 10016 ©1987) 224 pp., paperback, \$12.95

Woodturner's Project Book contains 43 difficulty rated projects. I like many of the projects, but I like even more the rating system. "A" projects should be well within the capabilities of novice turners who have mastered the six basic tools—the roughing gouge, skew chisel, straight chisel, spindle gouge, beading and parting tool, and fluted parting tool. Fourteen of the projects are "A" rated which include tool handles, drawer knobs, and various vases.

"B" projects are more difficult than the "A"s only in that they involve bowl turning, utilize fitted lids, or are more delicate. Projects include egg cups, baby's rattles, lamps, napkin holders, and the like.

"C" projects add precision turning, inlaying, and building assemblies entirely of turned pieces. Projects here include jewelry boxes, vanity mirrors, goblets, walking sticks, a collapsible cup, and a magician's egg cup (which is rated as more difficult than any of the other "C"s).

The projects are all clearly described and illustrated. In addition to telling the prospective turner what to do, the authors explain some of the potential pitfalls that could get in the way of successfully completing a project. Each project features a photo of the finished piece, a cutting list, a list of needed accessories and tools, the recommended finishing process, and the difficulty rating. There are clearly delineated steps to follow for completion, and each project is typically illustrated with half a dozen or more drawings and photos of just the right stages.

If you're a woodworker who enjoys a challenge at the lathe, you may find this to be a most engaging addition to your library.

Techniques of Wood Surface Decoration by David Hawkins (Sterling Publishing Company, 2 Park Avenue, New York, NY 10016, ©1987) 168 pp., paperback, \$12.95

I picked up *Techniques of Wood Surface Decoration* fully expecting a most attractive how-to book. With 201 photos, several pages in full color, and 56 drawings, it is attractive; but it's really much more. The book is actually nothing less than a history of intarsia, veneer, marquetry, parquetry (including oyster work), banding, and tunbridge ware—wood, metal, and repetition inlay, broulework, and other varieties as well.

Short on introductory and concluding materials, Hawkins, a master restorer in England, gets to the point at once and pursues that point relentlessly. He tells how he once sawed for over four hours to make a small piece for a repair; at that rate, he estimates, the decoration on the box he was repairing must have taken the better part of two hundred hours. As the combination of skills and strength have declined over the years, and the cost of time has risen, work like this has become more or less impossible to do.

The author describes enough repairs and how-to's with drawings, and photographs that it should be possible for a person who's willing to experiment a little bit, and spend some time practicing, to include decorated surfaces on his next project. I left this book wanting to make some of the pieces shown in it, and disappointed that the clock only allows me 24 all-too-filled hours in a day. I cannot recommend *Techniques of Wood Surface Decoration* too highly.

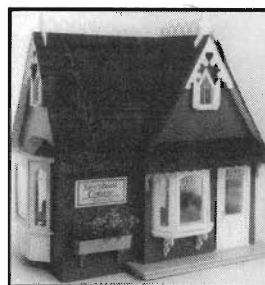
Contemporary American Woodworkers by Michael A. Stone (Gibbs M. Smith, Inc., P.O. Box 667, Layton, UT 84041, ©1986) 167 pp., hardback \$29.95

Michael Stone interviewed hundreds of craftsmen, curators, teachers, students, collectors, and gallery owners in search of material to include in this book which began as a homage to Wharton Esherick. One of the criterion for inclusion was that each individual's work had to surpass his modest celebrity. Each of the ten craftsmen included have contributed by teaching, writing, or introducing innovative designs or techniques. The introduction by A.U. Chastain-Chapman notes that all the included craftsmen are revered—though not necessarily by one another. After studying the photos and text, I can state with some fair certainty that their works are probably the "Chippendales" and "Sheratons" of our time. You should know most, if not all of these names: Wharton Esherick, George Nakashima, Bob Stocksdale, Tage Frid, Sam Maloof, Arthur Espenet Carpenter, James Krenov, Wendell Castle, Garry Knox Bennett, and Jere Osgood.

The book features pages of bibliographic material so the reader can further study whichever of these ten woodworkers most interests him. Most of us who read this book will find ourselves entranced into a good bit of additional reading.

One drawback to the book is that while each of the ten articles is excellent, and the illustrations superb (worth the price of admission by themselves), there is something that made it seem like just a collection of ten magazine pieces rather than an actual "book." That feeling began to gnaw at me as I was reading about the third woodworker. It may not be a problem, but it is the one thing that left me slightly

unsatisfied. Only you can judge whether the overall feeling will reduce the value of these ten fine articles about the most amazing woodcrafters ever to practice the art. Certainly, upon completing this inspirational—albeit not totally satisfying—book, you will be as anxious as I to see how Stone treats the second ten great woodworkers. I hope I don't have to wait too long to find out. **PW**



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Radial Arm Saw Joinery with Curtis Erpelding, ©1985 by The Tauton Press, Box 355, Newton, CT 06470, 110 minutes, \$39.95/\$14.95 to rent.

Curtis Erpelding designs and makes small production run and knock-down furniture in Seattle. His small cabinetmaking shop is fully equipped with all the usual stationary power tools, but when he started out eight years ago, it was a different story. The only large power tool at his disposal then was a Sears radial arm saw of early sixties vintage.

Necessity spurred him to develop methods for doing precision work with his radial arm saw that is usually done with a table saw. He shares these methods with us in this tape.

I viewed Erpelding's procedures with mixed emotions. For one thing, I can accomplish with accuracy and speed in a single pass on the table saw what takes him four or five passes to do with the radial arm saw. There is so much inherent and accumulated slop in a radial arm saw that precise work requires removing small amounts of material at a time to reduce vibration and movement in the column and arm.

The radial arm saw owner will need to have his machine in proper adjustment if he is to have any success at all. Erpelding demonstrates the four basic adjustments: paralleling the blade travel height with the table surface, squaring the fence to the arm, squaring the blade to the table, and adjusting the blade so it is not cocked relative to the axis of travel. Whenever the blade is tilted or re-tilted into an indexed position, it will be necessary to use an accurate framing square and to utilize the looseness in the indexing pins for a final-fine tuning. The absolute test for accuracy, we are warned, must always be a trial cut in a piece of scrap wood.

In his experience, Erpelding finds it better to rely on accurate positions of the stock using precise jigs rather than trying to adjust for compound angles using the tilting axis of the saw. In his demonstration, he either has the sawblade perpendicular to the table or parallel to the table.

Jigs are really what Erpelding is about. I could sense how much thought and effort went into making them. He uses them for all his joinery. Besides making the usual open mortise and tenon joints, he demonstrates a variation on this theme in which the tenon is actually a dovetail pin. His most exotic accomplishment was producing a square frame for a stool in which all four members are curved and joined with sliding dovetail tenons. I really like his designs.

He uses a combination of ramps and angled "cradles" to produce the necessary angles and compound angles for his joints. Sometimes he uses a clamp to hold the workpieces and other times uses hand pressure against a stop block. His most sophisticated jig cuts two frame blanks at a time, on a double-beveled ramp.

I have to say I'm glad to have seen this tape, if only to re-evaluate my opinion of the radial arm saw. It can do the job. Technically, the taping itself conforms to the standards I've come to expect from Tauton. Perhaps Curtis Erpelding could

Alan Marks is a cabinetmaker from Pacific Grove, California, and a contributing editor to PW.

have presented his subject matter in a more concise way, but he never bored me, and that says a lot. For someone who depends on this machine for all his needs, this tape is a godsend.

Table Saw Tricks and Jigs with Jon Eakes, ©1978 by Hercules Productions, distributed by Grizzly Imports Inc., (model #626) P.O. Box 2069, Bellingham, WA 98227, 60 minutes, \$29.95.

There is such an incredible contrast in presentation style between this tape and the one above. This one is really a slick production. Jon Eakes seems to me to be a professional demonstration expert. He presents his material in an almost machine gun fashion, in segments punctuated with heavy synth music. He's the kind of guy you'd expect to find working trade shows for big manufacturers like Delta.

In fact, because he is so concise, I have to retract one of my long-standing claims: namely, that it is impossible for a video tape to contain as much information as a book. This one actually does.

He presents, among other things, a whole conglomeration of jigs and fixtures to use with the table saw. These he uses to produce a variety of joints of various precision. Somehow I felt a bit less impressed by the jigs he showed, probably because they didn't seem capable of producing joints of furniture quality—my main interest. Most of them were "quick and dirty", but they all worked well enough to satisfy the needs of most hobby woodworkers. When you compare the aesthetically-pleasing, sophisticated jigs of Curtis Erpelding to these primitive, makeshift plywood creations, you cannot help but notice the difference.

As always, there are exceptions to the rule, notably Eakes' very precise jig for making compound angle cuts for picture frames. It's a real honey!

The videotape starts with a discussion of adjustments for the table saw—a good place to start. Eakes demonstrates a simple jig for making sure the blade is parallel to the miter slot which he uses afterwards to check that the fence is also parallel. If there is any slop in the miter gauge bar, he shows how to correct it. To check if the miter gauge is perpendicular to the blade, he cuts a piece of scrap wood to compare sides of the cut and does the same to see that the blade is exactly perpendicular to the table. The only requirement of the scrap wood is that it have parallel sides along its length. Later on, he shows how to cut parallel sides on a curved piece of wood (a short piece) against the fence.

After a short discussion of blade guards, splitters/spreaders, and anti-kickback fingers, (which I think should have been coupled with his exhaustive section on push sticks—important safety devices themselves) he discusses what he calls "dressing the table," by which he means adding wood to the fence and miter gauge. He then talks about three types of blades: crosscut, rip, and combination blades.

It would be impossible to describe in detail all the various jigs and fixtures he demonstrates. There are so many of them. He shows a sliding mortise and tenon fence that rides on the saw fence and also jigs for cutting tiny strips. He shows how to mock up cheap table extensions, introduces us to feather boards and

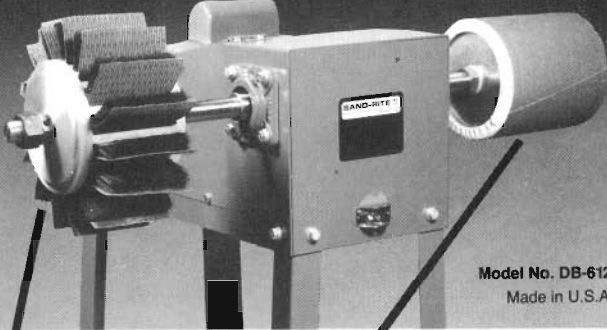
"cheater shims," angle jigs, a homemade sliding table, a box joint jig, and many more. He covers everything quickly and professionally, in a way that's easy to understand. He shows dado blades and ways of cutting slots at repeatable intervals with a regular blade. As you can tell, this tape is a great introduction to the possibilities of the table saw.

He also included a crude method of repeating straight-sided geometrical forms, which he called using the table saw for "shaping," and one for using a dado blade for edge jointing thin pieces of wood, which he called transforming the table saw into a jointer. I objected to this sort of misrepresentation, but on the whole, this tape contains a huge amount of useful information and advice, and I have to rank it as the most complete I have seen on the subject. **PW**

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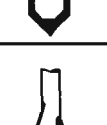
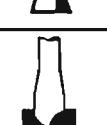
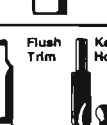
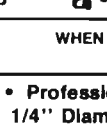
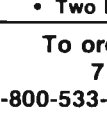
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The logical place for craftsmen who are new to the marketplace to begin selling their wares is at the many retail crafts fairs held throughout the country. But it's difficult to sustain a business while riding the crafts circuit. One must

sale trade show, a vehicle that attracts hundreds of wholesale buyers eager to put your work in their shops and galleries. "Wholesale buyers prefer crafts to other products because of their design and quality, but also because of the personal

membership in the sponsoring organization required? How much is booth space? Is there a deposit? What is included in the booth fee? Will there be an added cost for electricity? Will I have to pay union wages for carpenters and others to set up and take down my booth (required in some cases)?

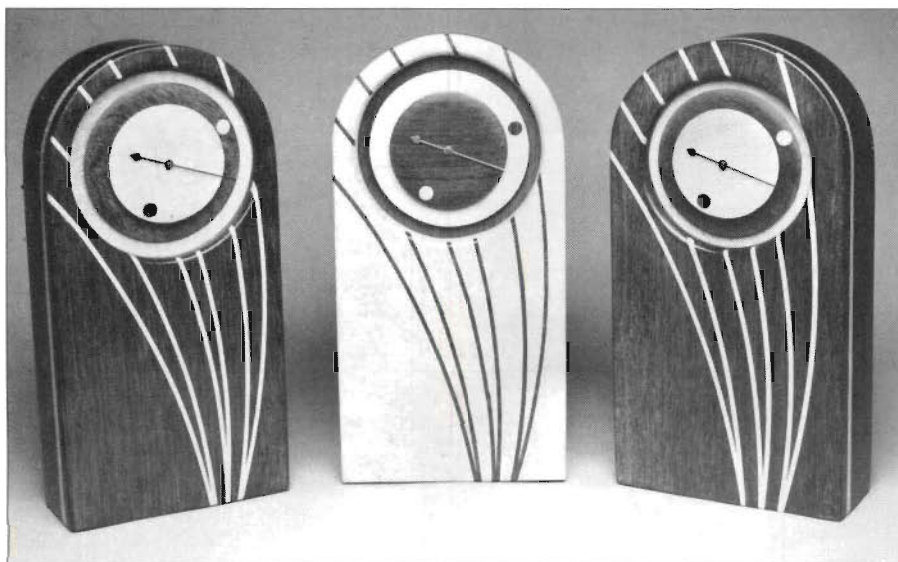
*In what kind of facility will the show be held? How far is it from hotels and other accommodations?

*What, if any, restrictions are imposed by the show's management?

*Does the show conflict with another that might attract more buyers?

*What is the deadline to register for a show, and how are exhibitors selected?

And how can woodworkers expect to fair at trade shows? According to figures published by American Craft Enterprises, woodworking placed fifth among eight categories in both wholesale (\$284,012) and retail (\$127,355) sales at the 1986 ACC Craft Fair in Baltimore. Average sales of the 41 woodworkers who turned in fair reports were \$6,927 wholesale and \$4,548 retail. During the rosen Agency's



Production run crafts such as these clocks by Timely Designs are popular gift items.

constantly juggle time on the road with time in the shop. Another problem is that the public doesn't necessarily come to crafts fairs to buy. Rather, they often come to browse and take part in the festivities.

Trade shows, however, attract people whose sole purpose is to buy goods in large quantities to resell in their stores. By traveling to just one or two trade shows, you can make your products available to the largest possible market — one that stretches nationwide, instead of just the tourists at "Toast and Jelly Days."

Interest in hand-crafted items is increasing in the United States as more people discover the value of owning quality products made by individuals who take pride in their work. Because of the great demand for crafts, the number of retail outlets that sell this type of merchandise has increased.

The way into this market is the whole-

relationship established with the craftsman," says Wendy Rosen, president of The Rosen Agency, Inc., sponsor of three popular trade shows.

Exhibiting at a trade show — and reaping its benefits — takes preparation on the part of the enterprising woodworker. Just as in any business, there are ropes to be learned, and Rosen believes that the time to enter the wholesale marketplace is at least a year before the first exhibit in which you wish to participate. This may seem like an awesome task and one with little relevance to the craftsman who needs to boost sales immediately. But such preparation can mean the difference between new and profitable accounts, and time and money wasted on a show for which the seller is unprepared.

If you are to get the most out of a trade show, crucial facts must first be obtained. Rosen suggests that you seek answers to the following questions:

*Who are the buyers and how many of them are expected to attend a given show? Who sponsors the show and what is its record?

*What are the costs of attending? Is



Your products could become available nationwide by entering a wholesale trade show. The Joy of Doing exhibits sculptured marquetry above.

Valley Forge show in 1986, woodworkers ranked fourth in sales in six categories. Average sales for the 125 woodworkers attending was \$12,436 per exhibitor.

Criteria for selection to a show vary among promoters. The Rosen Agency

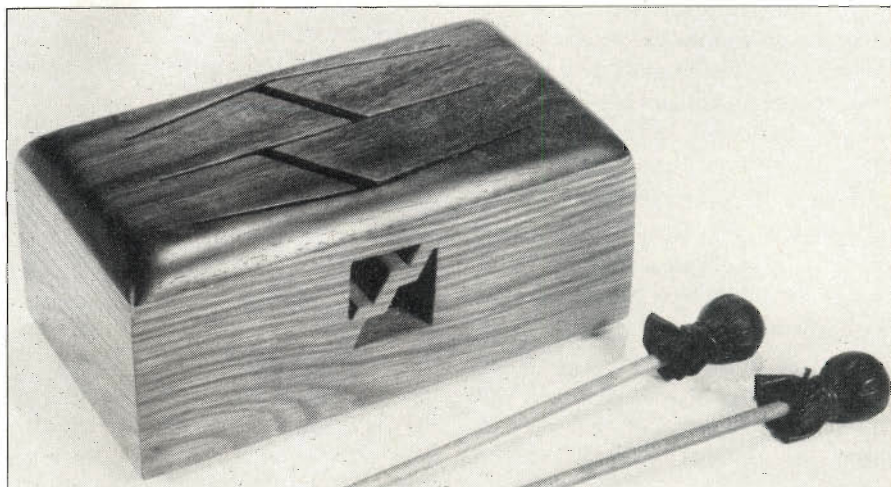
Paul Gerhards has been a carpenter/woodworker for fourteen years before turning to freelance writing. His home is in Silverton, Oregon.

stipulates that exhibitors work full-time in their business and have some form of wholesale experience. These are non-juried shows, but five slides are required to accompany the application, one of which should be of your booth, the others of products. The emphasis here is on wholesale marketing, and only when the number of available spaces far outweigh the number of remaining applicants will lesser products be given more serious attention. Craftsmen who have the edge are those who offer products of truly unique designs.

American Craft Enterprises has a more stringent selection process. As juried events, these shows focus on product quality. Five slides are required and are viewed simultaneously by a committee of as many as eight persons. Slides must be indicative of the products that will be sold during the show, and the ratio of slides to product lines must be the same as what will be exhibited. For example, if you send one slide of production work and four of one-of-a-kind items, then 20% of what you offer at the show must be pro-



keys to success at trade shows (and any show, for that matter). Rosen estimates that the average trade show attendee spends just about 30 seconds in front of a booth before moving on. It's the



This tapered drum, built of solid hardwood, is just one marketable idea from Nova Diversified.

craftsman's job to encourage the buyer to stay long enough to place an order.

An attractive, well-organized, and well-lit booth is essential to grabbing customer attention during an event, but the innovative craftsman can do much more to boost sales long before the doors open, with pre-show mailings and phone calls to potential clients. Rosen says that it's important to "tell buyers ahead of time that you have new products to show, and that it will be worth their time and effort to make it a point to get to your booth. If you don't do your job before the trade show, you may find that your regular buyers will walk right by your booth without stopping. They think they already know what's in your booth and that they can order over the phone after the show."

Obtaining a list of buyers may take a little research, but it's worth the effort. Show promoters may be able to provide a list, or do a mailing for you. An alternative is purchasing a copy of *The Craft Market Listing*, available from M. Sue Francisco, The Francisco Enterprise, 572 - 143rd St., Caledonia, MI 49316. *The Craft Market Listing* is a computer-generated list of more than 1,600 shops, galleries and other outlets that sell finished

crafts. It is available as a source book or in the form of gummed mailing labels, both arranged either alphabetically or by zip code. Each list sells for \$100 and is guaranteed 90% deliverable.

Determining the right prices to charge for crafted items cannot be over stressed. Naturally, you want to be competitive, but you also want to make a respectable living. Under-pricing can be disastrous, particularly if you can't afford to fulfill a large and potentially profitable order.

A properly priced piece of work should include the cost of materials, wages, and profit. Doubling this figure will establish the suggested retail price. This is how much you would sell the item for to the general public or the price you would expect wholesale buyers to sell the item for in their stores. It also is the price wholesale buyers most often expect to see on your work at a trade show. You, in turn, offer the wholesale buyer a discount, usually 50%.

Once a wholesale buyer purchases your work, you no longer have any say about what the store will charge for an object. Depending on the store's location, reputation, and other factors, you may find that a store's price is considerably higher than your suggested retail price. American Craft Enterprises suggests that if all your shops are getting more than double the wholesale price, it's likely that your work is under-priced.

Selling at a trade show involves more

photos courtesy of the Rosen Agency

duction work, and 80% must be of the unique items. A committee will check the ratio during the shows. If selected to participate in the show, you must become a member of the American Craft Council.

Promotion and pricing are the two

than just being present to take orders or sell from available stock. The woodworker must also be a salesman. When buyers stop by your exhibit, engage them in a conversation both about your work and their store. Describe why your product is unique, ask where their store is, and if they carry the kind of work you have to offer. Once you've established a rapport with the buyer, explain your policies on shipping, exchanges, and delivery schedule.

The next step, the most important one you will take, is asking for the order. Don't expect a hurried and jostled buyer to make the first move. If the buyer declines to write an order, offer a brochure and an order form, and ask for his or her business card. Once back at your shop, continue the relationship with new or prospective accounts by sending them a short note.

One mistake made by craftsmen new to wholesaling is taking more orders than they can reasonably expect to fill. Having written as much business as you feel comfortable with, post a sign stating that you no longer are taking orders.

Briggs Fantasies sculptured this one-of-a-kind, 54" peacock from 12 different woods.



photo courtesy of the Rosen Agency

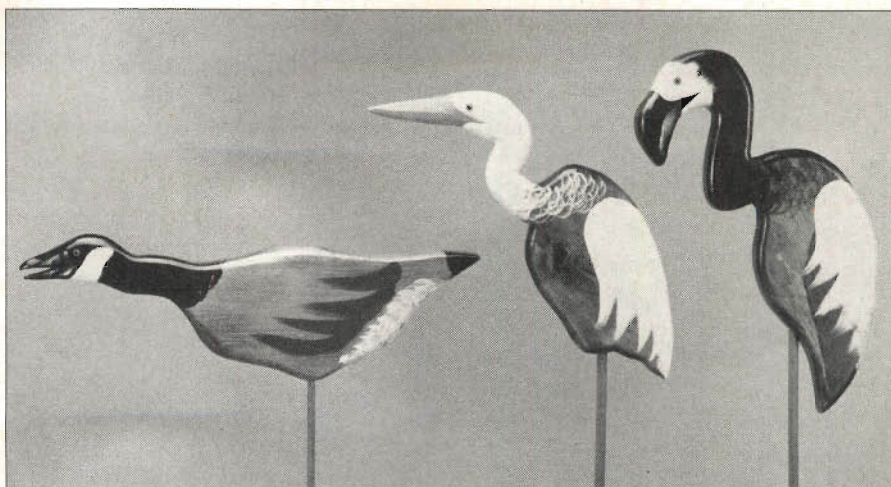


photo: unknown

These three waterfowl demonstrate that the successful crafts aren't always the intricate ones.

At the other extreme, when few sales are made, first-timers often leave the show feeling that it was not worthwhile. "Wrong," says Rosen. "It takes lots of

exposure to tap into an industry, regardless of which buying group you seek." Contacts made with buyers can result in unknown future sales. **PW**

About the Shows

American Craft Enterprises, Inc., a subsidiary of the American Craft Council (ACC), operates four major trade shows (ACC Craft Fairs) each year. The "Winter Market of American Crafts" will be held February 16-21 at the Baltimore Convention Center in Baltimore, Maryland. "The Spring Craft Market" is sponsored in conjunction with the Minnesota State Arts Board and will be held at the St. Paul Civic Center, April 6-10, 1988. Though featuring craftsmen from across the country, its focus is on the upper midwest. In its 23rd year "the ACC Craft Fair West Springfield" will take place June 21-26, 1988 at the Eastern States Exposition in West Springfield, Massachusetts. Their "Pacific States Craft Fair" at Fort Mason in San Francisco, California will be August 10-14, 1988.

All four events feature trade days (for wholesale buyers only) and public days (retail), or run the two consecutively. Booth fees range from \$350 for a 10' x 10' space at Minneapolis to \$825 for a 15' x 10' wholesale/retail space at

West Springfield. Deadline for all four events is in October of the prior year. For more information contact American Craft Enterprises, Inc., P.O. Box 10, New Paltz, NY 12561 or call (914) 255-0039.

Craft Market America (CMA) schedules their annual trade show to coincide with ACC's event in West Springfield, Massachusetts. CMA's will take place at the Springfield Civic Center. Their hours extend well into the evening and they provide a continuous shuttle service to and from the ACC Fair to accommodate buyers. At press time their tentative dates for 1988 were June 21-23. For more information contact Craft Market America, P.O. Box 30, Sugar Loaf, NY 10980 or call (914) 469-2157.

Beckman's Gift Shows are scheduled twice a year at the Los Angeles Sports Arena in California. January 24-28 and June 24-28 are the dates planned for 1988. They attract more than 17,000 buyers. The shows are not juried, but

continued on page 54

Initially I wanted to call this article simply "Routers" by which I mean plain old traditional routers, the tools that have been known for hundreds of years by that name. Nowadays, the tool everyone (or almost everyone) thinks about when the word router is mentioned is the electric router. After centuries of being known simply as a router, the older tool has had to adopt all sorts of stratagems to identify

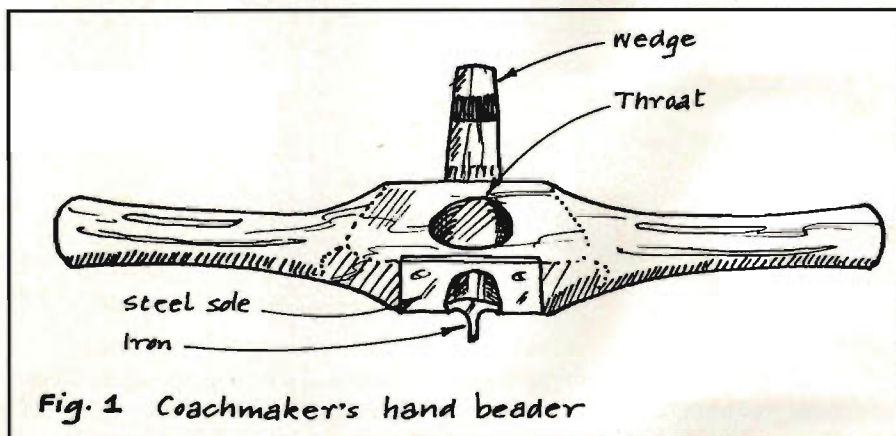
before the introduction of the electric router, if you were to ask a woodworker from almost any of the woodworking trades to "pass you the router," he would have had to ask you to be more specific before being able to comply.

Now at this point, you may be asking yourselves why, if the old-time routers were such unique and indispensable tools, have they disappeared so com-

As always, times are changing, and once again the economics of the woodworking scene are different. Those abandoned operations, while perhaps still economically unfeasible for large commercial builders, might well find a place again in smaller shops where absolute economy of time is not the prime concern. Enough people are prepared to pay what it costs to obtain work that is not only sound, but which has artistic merit as well. It is this work which stands to benefit from the revival of the skills and techniques that the hand router has to offer.

A brief description of some of these fascinating tools will demonstrate the range of work and quality of ideas that could be integrated with the rest of today's "power"-ful techniques.

One of my favorites is a hand router properly defined as a coachmaker's hand beader, also known as a circular beading tool (see Figure 1). This extremely simple looking tool can do something which is exceedingly difficult to do with an electric router, namely to work beads on two axes. Imagine you have a curved section of moulding that requires work on a corner bead. This is a bead with a quirk or groove on both sides. In this case, one quirk on one face of the moulding and the second quirk on the adjacent face. If you set up an electric router to cut the quirk on the flat face, you will have to readjust its fence and change the bit when you come to cut the quirk on the curved face. The difficulty is compounded should you want to cut the quirks on the inside curve instead of the outside curve (see Figure 2).



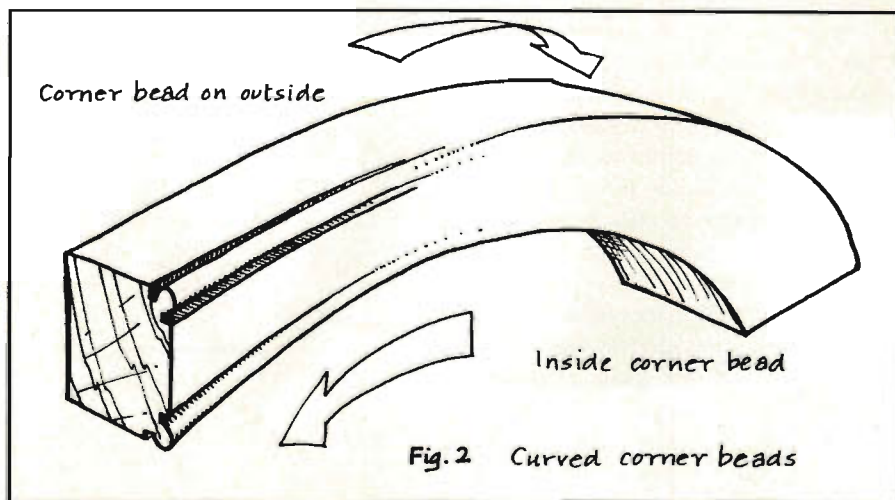
Illustrations by the author

itself and avoid confusion with an electric power tool that is only distantly related.

I could make some inferences regarding the relative importance and merits of those older hand tools versus their powered contemporary cousins. However, the electric router is so far removed from the pre-electric router that it's quite unfair to compare the two, and far less reasonable to assert the superiority of one over the other.

To be fair to the electric router, I must admit that while it may not perform all the functions previously undertaken by hand routers, it does do a lot of things that the older tools didn't. For example, the electric router, and its big cousin the shaper, have taken the place of various specialty planes such as sash, fillester, dado, and (to a less successful degree) various moulding planes. In fact, there are many jobs done by the older tool that just aren't possible with the newer tool. So many that

pletely from the contemporary shop? One reason is that styles and fashions have changed. Much of the work that was done with these tools is no longer needed. The advent of the electric router forced a simplification of much woodwork because it was impossible to ignore the huge savings in time — even at the expense of fewer woodworking effects. Many operations that could only be performed with the handtools were foregone since they could not compete *economically* with those operations that the power router could achieve.

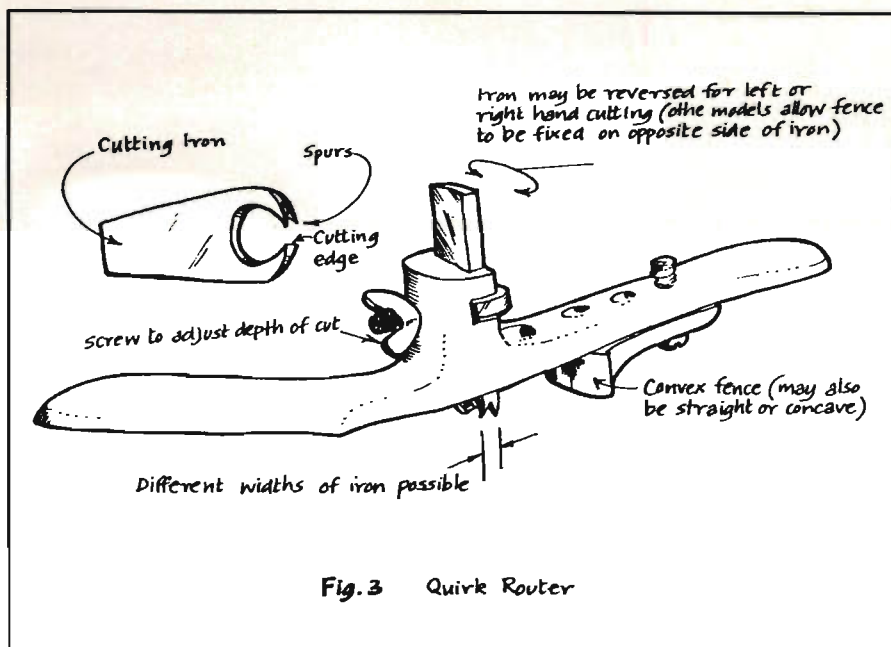


Graham Blackburn is a furniture designer/maker in Soquel, California and the author of many books including *The Illustrated Encyclopedia of Woodworking Hand Tools, Instruments and Devices* published by Simon and Schuster, 1230 Avenue of the Americas, New York, NY 10020.

With the coachmaker's hand beader there is no setting up to be done at all, the tool will work any two adjacent faces regardless of the direction or axis of the curve. Furthermore, since the iron is two-sided the tool can be worked in either direction, which is invaluable for dealing with changing grain directions (and something that is difficult to do with an electric router since the bit rotates in only one direction). These tools were frequently owner-made, and there is no reason why they should not be so again. The advantage of this lies in the fact that they can be made to any required size, and just a few are likely to satisfy all your beading needs.

A bead, incidentally, is one of the more functional mouldings that can be incorporated into your work. It's not just ornamental, creating extra lines of shadow to define the contours of a piece of work, but very practical since it's a good way to save square and vulnerable corners from unsightly wear. Practically all old door and window trim was treated this way. Wooden beading planes, which I discussed in the last "Tried & True" (June/July '87, issue #37) work fine for straight edges, but for working beads on arches, curved door or window frames, round wooden lids, shaped chair backs, or anything not straight, the hand beader is indispensable. I should point out that although it excels in creating corner beads, it can of course, be used to cut side beads.

A closely related but somewhat more sophisticated hand router is the quirk router (see Figure 3). A quirk is a narrow groove usually associated with a moulding — such as a quirked ogee (see Figure 4), but as far as this tool is concerned it simply means any narrow groove. The narrowness is also open to interpretation for it can vary from narrow to quite wide. Once again, this router is for working quirks or grooves in curved surfaces. Many were handmade, but this tool was also manufactured by Marples, Mathieson, and Preston, and most manufacturers offered different models varying in sophistication and size. Most came with adjustable fences, and quality ones were provided with differently shaped fences to better the tool's performance on concave and convex surfaces. The fences are



adjustable so the groove may be worked at varying distances from the edge, and they can be fixed on either side of the iron, making this a right- or left-handed tool, like the hand beader.

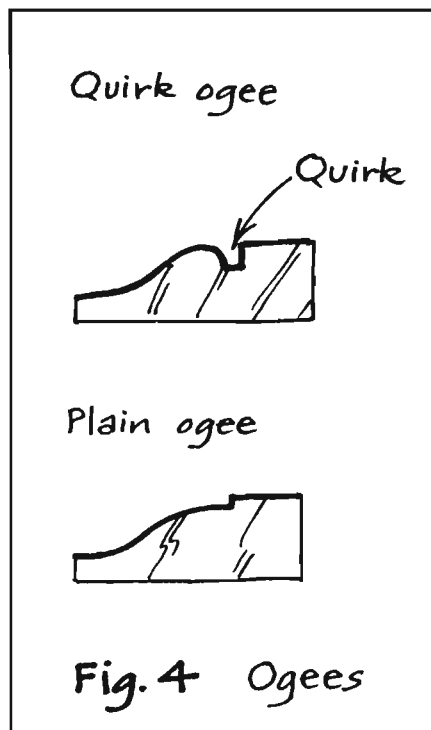
Since the iron may be raised or lowered any amount, from less than flush to a depth of up to almost an inch, and since different iron widths may be substituted, there is a great range in the sizes of grooves. A groove of intermediate size

could be worked by simply cutting one groove first and then resetting the fence appropriately to cut the adjacent groove at the desired width. (It is worth noting that when doing this, it is usually easiest to cut the groove furthest from the edge first, and then work in.)

The irons of these tools are quite unique and deserve a little explanation, for at first sight they might appear puzzling (see Figure 3). The business end forms a semi-circle, creating two cutting edges. The forward tip is filed in the middle of its thickness to form two spurs that sever the fibers of the wood. The chisel-shaped rear tip follows to cut and lift out the wood that has been scored by the spur-like tip.

Since the spurs and cutting edge are made from the same piece of metal, there is never any difficulty in aligning the spurs to the exact width of the cut to be made. When sharpening these small irons be careful not to sharpen the spurs on the outside. Use a knife-edge slip stone only in the center of the spurs. From time to time it may be advisable to hone the irons on their sides, thereby ensuring that the width of both cutters is absolutely consistent. Be aware that just as with sharpening electric router bits, this is liable to alter the overall dimension, and the same iron (or bit) will now cut grooves that are somewhat narrower.

The practical uses of this tool range



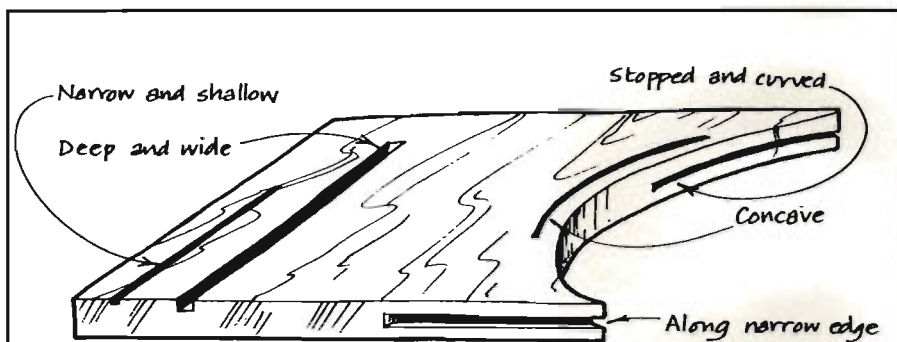


Fig. 5 Some of the quirks possible with a Quirk Router

from routing small grooves for inlaying, to larger joinery operations such as routing grooves in curved framing members to receive curved paneling. The joy of this tool is that it makes no difference whether you are working a straight or a compound curved surface; you can go anywhere with it, and in any direction (see Figure 5).

There is an especially interesting tool that deserves special notice on account of its rarity and consequent high value. Most of the tools discussed in this column are not too hard to find and certainly not expensive. This startling exception is the router-related tool often referred to as a circular plow. It looks like a small plow plane — the old wooden kind — but the fence (usually metal) is flexible and can be adjusted to match both convex and

concave curves. However, since it is much rarer than any of the other hand routers its possession has been almost exclusively the province of collectors, often costing considerable sums of money (sometimes thousands). There are some beautiful French examples from the 18th century with finely made pistol grips that show up at auctions and fall into the hands of antique tool dealers from time to time. A commoner model (the Falconer's plow, named after its designer in 1846), sold at Christies, the London auction house in 1981 for \$2,035!

A much commoner tool is the "old woman's tooth plane" (see Figure 6). This may be the grandmother of all routers. It is no more than an iron fixed almost vertically in a block of wood. This de-

scription could be given to most wooden planes, and the analogy is similar: both tools were developed from the need to control the depth of a cutting edge more exactly. These tools were manufactured professionally, but by far the greatest number were user-made, employing old files or broken chisels as the irons. Unlike many other antique and venerable tools, they were not the most manageable to use. Their immediate successors, the iron and metallic versions developed in the nineteenth century were a vast improvement.

The best known of these are probably those various models made by Stanley™ and indeed, one model is still sold (see Figure 7). Its use as an occasional tool is

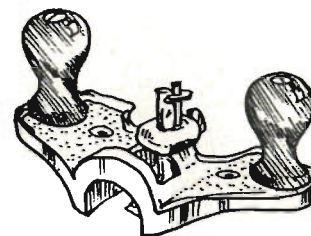


Fig. 7 Metallic Router plane

well worthwhile, but in this case it's hard to assert the superiority of the older tool over the contemporary power tool. It is, though, quiet and safe!

The large hand router (now known as a router plane, since having been introduced by Stanley™ under that categorization) has spawned a couple of smaller cousins, and these are extremely useful, being much used by inlayers and instrument makers. They may be made even more useful by providing them with extra irons filed to different shapes — just as there are irons of different sizes and shapes for the larger tools.

This list is not exhaustive, but I hope enough has been said to cause more than a glimmer of confused interest the next time you run across one of these older routers, and also, hopefully, to raise the possibility of attempting something new in your next project which you might not know how to accomplish with your electric router. **[PW]**

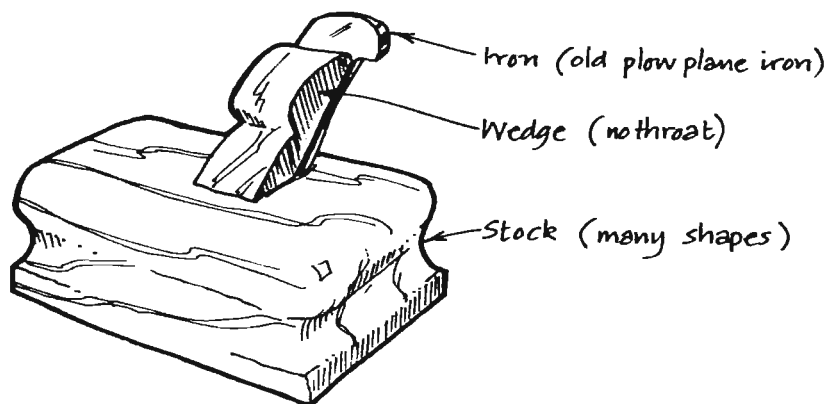


Fig. 6 Old Woman's Tooth

Antique

by John A. Nelson

Five or six years ago I found this very unusual wall cupboard hanging in an antique shop in southern New Hampshire. It was so different, with its wooden hinges and wooden latch, that I just had to have it. But the original was in extremely poor condition and with a price tag of \$175, it was just a little more than I wanted to spend. I went out to the car, got my camera and tape measure, and simply took a few measurements and two or three photos of it. The result is this new "antique."

The original cupboard was made of pine and painted, although most of the original paint was worn off. An 8" X 16" mirror could be added inside the door, making this old wall cupboard into a functional bathroom cupboard for use today, (the center shelf must be cut back to allow for the mirror). This unique and unusual design will add that "country" look to any room.

Instructions

The entire cupboard can be made with a single piece of 1/2" X 10" pine board 10' long. It would be best to choose a board that is straight grained and with as few knots as possible.

The backboard (A) will have to be glued up to obtain the 12" width; this should be done first and put aside. Cut the two sides (B), three shelves (C), two front panels (D), and the door (E) to rough size.

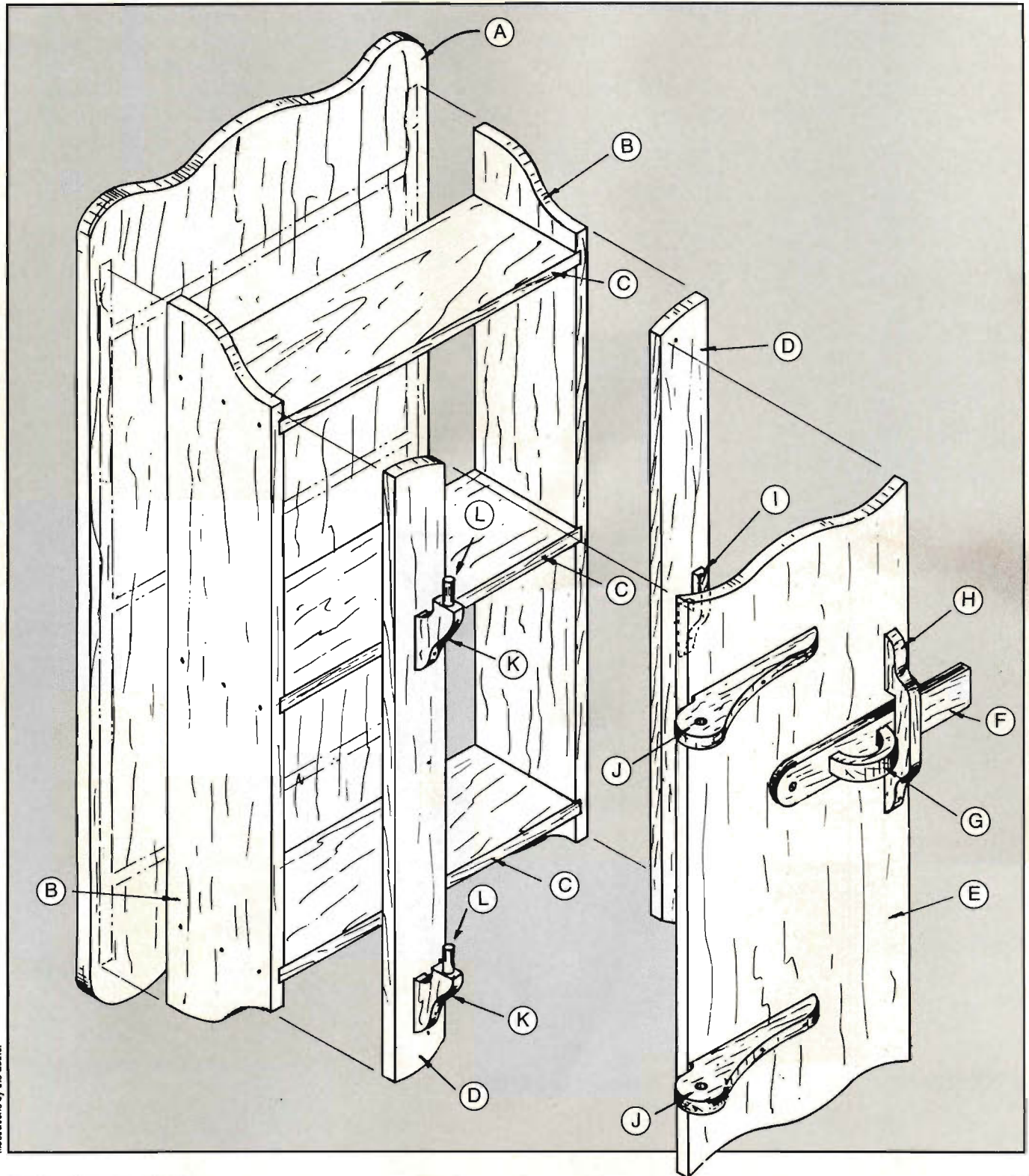
The latch (F), latch handle (G), latch retainer (H), catch (I), hinge (J) and hinge base (K) are cut from the remaining scrap pieces. The hinge pins (L) are made from 3/8" dowel. Carefully lay out the shape of each piece by enlarging the squared draw-

John A. Nelson is a woodworker and drafting instructor from Peterborough, New Hampshire, and the author of more than 15 books on those subjects, including Antique Furniture Reproduction (Van Nostrand Reinhold Company, Inc., 135 West Street, New York, NY 10020).



Deborah Porter

Wall Cupboard



ings. Any parts that are duplicates must be exact pairs; tape together and shape them simultaneously. Drill a $\frac{3}{8}$ " hole into the hinges and hinge bases where indicated, and glue the pins in place. Using square-cut nails (available from Tremont Nail Company, 21 Elm Street, P.O. Box 111, Wareham, MA 02571), glue and nail the case together using the back, sides and front panels.

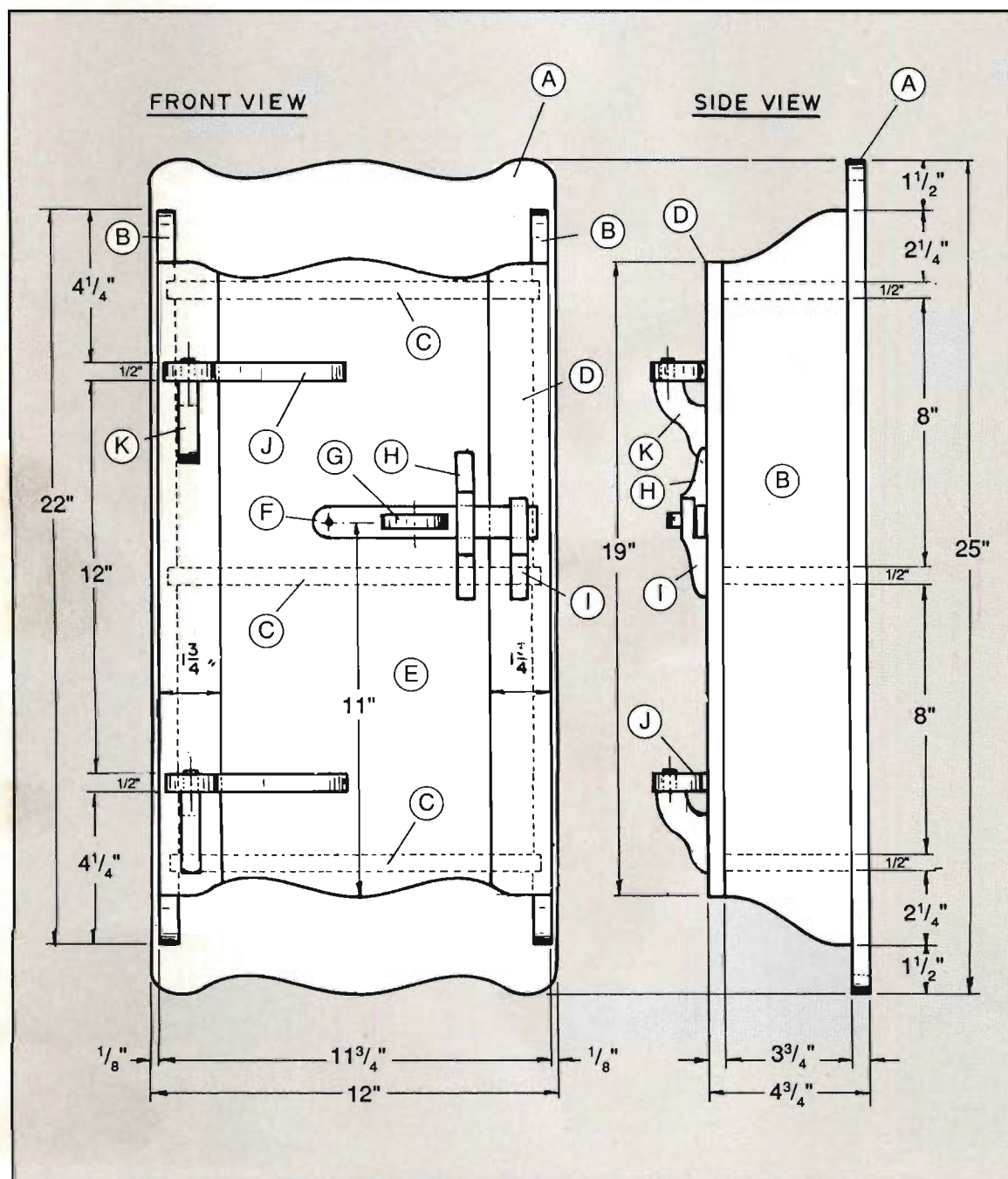
To insure a good fitting door, temporarily tack the door in place and then glue and nail the front panels in place leaving a *slight* space between them and the door. Take care to keep everything square and parallel. With the door still tacked in place, attach the hinges (J) and hinge bases (K) $4\frac{1}{4}$ " up and down as indicated in the plans. Attach the latch, latch handle, and latch retainer in place, keeping the latch and latch handle parallel to the shelves. Install the catch at the same level and in line with the latch retainer. Check for correct movement, and adjust as

necessary.

Remove the nails that held the door in place. If everything is correct, the door should open and close very smoothly. If the door swings too tightly, lift it off and sand a little bit off the dowel pins.

Adding That 100-Year Touch

I personally feel that any copy of an antique should look like an antique, not a newly constructed piece of an old design. Therefore, I recommend that you "distress" your new piece as my copy is. I went so far as to use an old split board for the backboard. If you saw my wall cupboard, at first glance, you would think I had the original. It has scratches, dings and dents on it, the paint has been rubbed away on the edges, and has worn marks where the latch goes up and down, exactly as the original had. This effect is very easy to do, but it does take a little "nerve" to add 100 years to your carefully sanded, just com-



Illustrations by the author

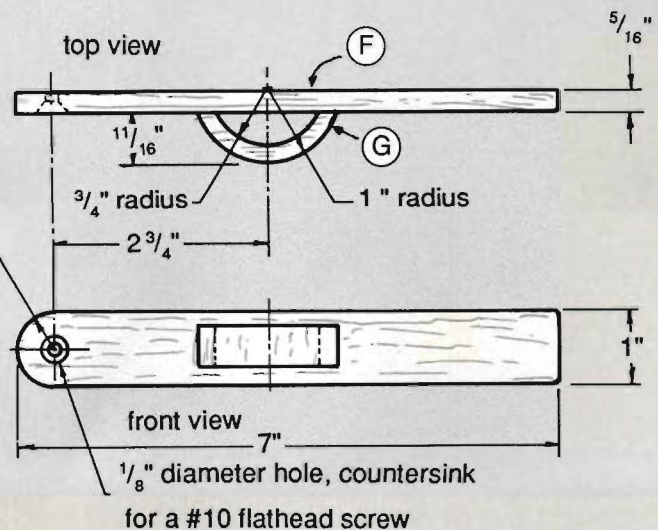
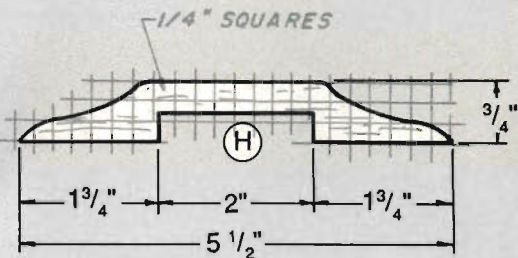
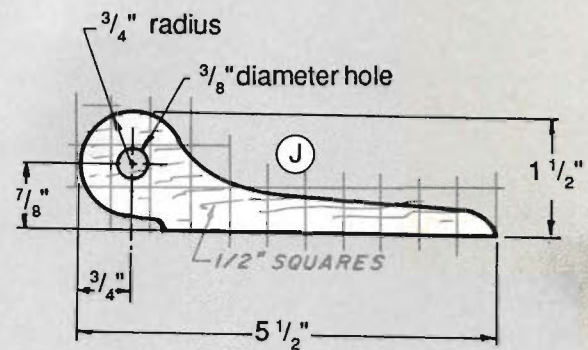
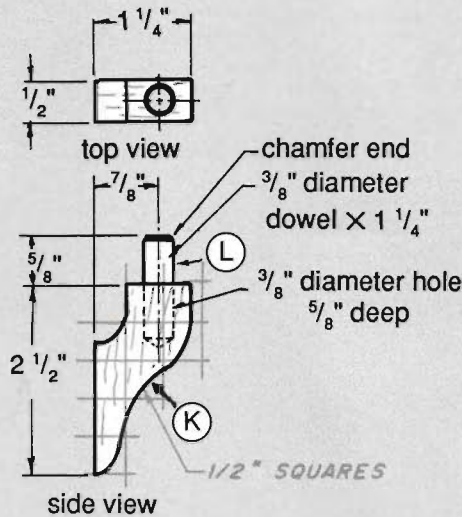
Antique Wall Cupboard

Cutting List

Qty.	Part	Finished Size			Piece
		T	W	L	
1	A	1/2"	12"	25"	backboard
2	B	1/2"	3 3/4"	22"	sides
3	C	1/2"	3 3/4"	11 3/4"	shelves
2	D	1/2"	3 3/4"	19"	front panels
1	E	1/2"	8 1/4"	17"	door
2	F	5/16"	1"	7"	latch
1	G	1/2"	1 1/16"	2"	latch handle
1	H	1/2"	3/4"	5 1/2"	latch retainer
1	I	1/2"	3/4"	3"	catch
2	J	1/2"	1 1/2"	5 1/2"	hinge
2	K	1/2"	1 1/4"	2 1/2"	hinge base
2	L	3/8" dowel	1 1/4"		hinge pin

pleted project.

To distress a project, I simply roll my finished work on my peastone walkway to achieve random dings and scratches. Lightly re-sand the entire project and wipe off all dust. Paint and finish as you would any project. Allow the paint to dry for 48 hours, and using #0000 steel wool, lightly rub the entire project to remove the new paint shine. Using fine sandpaper, sand the edges and any surfaces that you think probably would have received wear from the past 100 years. Don't be afraid to sand all the way down to the bare wood— this is what would have happened in normal use through the years. For that final touch, apply a glaze coat of an oil-based black paint over the entire project and immediately wipe it off, leaving a little in the corners, scratches and dents. You should now have a new "antique" to enjoy for another 100 years. **PW**



Wood Types

Elm: America's Forgotten Wood

by Ken Textor

Using elm in woodworking today is about as common as crossing the Atlantic on a square-rigged ship. For a hardwood so steeped in American tradition, so versatile, attractive, and so potentially cheap, this might seem hard to believe. Mentioning its use to friends and fellow woodworkers can bring reactions that range from a blank stare to incredulity to outright condemnation.

Elm wasn't always ignored. When the first settlers arrived in North America in the 1600's, elm woods were as common as oaks and pines. And like oak and pine, there were several varieties of elm - six different species in all. American elm (also known as white elm, water elm, or gray elm) was the preferred species. It was the most common, grew to the largest size, and was among the best for strength and toughness. Indeed, it's American elm's ability to resist splitting that made it a favorite among woodworkers and an enemy to firewood merchants.

American elm (*ulmus americanus* L.) quickly became prized for wagon wheel hubs, butcher's blocks, slack barrels, and other items requiring a high resistance to splitting. It was also used in furniture, railroad ties, farm implements, small boat ribs, caskets, and flooring, particularly barn flooring. Although modern forestry scientists have yet to definitively prove it, farmers believed elm flooring in barns resisted the rotting effects of cattle urine better than other hardwoods.

In any case, the American elm also became prized as a shade tree along colonial streets. Its tall (75' average) vase-like crown spread across streets providing shade, but leaving traffic uninhibited. It grew quickly and without much fuss. And during the Revolution, it gained notoriety by being the original "Liberty Tree," a rallying point



and symbol for rebelling Boston colonists, and later, all other colonists.

All of this, however, didn't keep elm from the sawyer's blades. Until the 1920's, elm was a commercially valuable hardwood, abundant enough to be used in pulp and paper production. But the decline in its use was precipitous, due largely to the introduction of Dutch elm disease into the United States. The disease, which is actually a fungus carried by the elm bark beetle, moved quickly through elm populations in the East and Midwest. By the 1960's, millions of elms had died along streets and in forests.

Moreover, sawyers became leery of elm logs appearing at their mills. Not only could infected logs spread the disease, but reductions in the general elm population made it tempting for loggers to cut elms planted as "line trees." These trees marked land boundaries and could play havoc with the mill's machinery. One piece of old fence wire, or nail, or surveyor's iron pin embedded in the log could ruin a costly saw blade, shutting down the mill for several days until repairs could be made.

Today, the situation has changed little, except that elm supplies have become even more scarce. Manufacturers that relied on American elm for their products have switched to other hardwoods. Elm veneer suppliers still stock some types of the wood. But the use of solid elm lumber needn't die out altogether. If you can mill the lumber yourself, or find a mill that is willing, you'll find it a pleasure to work with.

Its color ranges from nearly white to light brown or reddish-brown. Its interlocking grain creates an interesting "brushed" effect. But above all, American elm's ability to reflect light

iridescently is its most attractive quality. This almost kaleidoscopic play of light gives the wood a look of depth unknown in most native hardwoods.

Elm bends quite easily when steamed, more easily than traditional oak. It also resists the splitting common to the bending process, again better than oak.

But there are some problems in working elm, particularly in larger pieces. Since many elms grow in the open, foresters say the grain will be twisted and stressed in different directions. Maine forest ranger Don Hicks said that trees on a windy coast are constantly subjected to winds from varying directions which force the tree's growth to compensate with twisted grain.

I've found that this twisted grain makes planing difficult. Sometimes a board would plane easily to a certain point and then suddenly chip or seriously raise the grain in the middle of the same board. Usually, some hand planing eliminates these problems, but this can be time-consuming and not always successful.

I have also used elm in replacing axe, sledge, and other tool handles, for replacement chair rungs and making bowls. Elm proved to be an excellent wood for turning. The wood came off smoothly and without chipping.

American elm may never again be available as a commercial hardwood. But there are groups trying to ensure that the "Liberty Tree" once again does grace America's streets. The Elm Research Institute of Harrisville, N.H., has developed a disease-resistant American elm that can be purchased as seedlings. If you want to ensure that your woodworking grandchildren will have a source of American elm, and a tangible heritage, you may want to contact the Institute at 1-800-FOR-ELMS. **PW**

Using Elm in Your Work

by Ken Textor

The death of an American elm along our nation's streets and highways can supply you with a cheap, abundant source of hardwood lumber. Road crews are usually happy to have you come along and pick up butt logs that they would otherwise have to saw up and cart away.

The hitch in this plan is two-fold, though. Unless an American elm is more than 15% damaged by Dutch elm disease, it may still be saved by injections of a fungicide that kills the disease-bearing agent. Beyond 15%, the tree will probably be a total loss. Thus you don't want to encourage cutting down these magnificent shade trees unless it is certain they are beyond help.

The second problem is timing when the road crews will be taking these trees down. They don't want them

left lying by the side of the road for weeks, and neither do you. Disease-infected trees can infect other elms as long as the bark remains on. Bark also holds moisture in the log, creating an ideal situation for discoloration and rot. It's best to coordinate your elm procurement with local road crews or tree experts.

You should make arrangements with a local sawyer in advance for the milling of the log. If he can't get to it immediately, you'll have to peel the bark, which is easier than it sounds. Dutch elm disease attacks the tree where the bark meets the sapwood, so the bark nearly falls off a dead tree.

If the tree was not in the forest, you must run a metal detector over it before milling. If the meter registers the presence of metal, cut that part of the log away from the rest. If it's in the middle of the log, you may have to settle for two sets of 8' boards instead of one set of 16' boards. In any case, don't run a log through that hasn't passed the test. **PW**

Ken Textor is a woodworker and writer in Addison Maine.

Make Your Own Handscrew Clamps

by Jerry Ernce

You'd think that since I make my own handscrew clamps, I'd never suffer from a shortage. Not so. I can't seem to keep them in my shop because everyone who sees them just *has* to have one. It seems like I am always making one or more for myself just so I can have a workable shop. They're fun to make, and the pride of using a fine tool you made yourself instills a lot of confidence in your work. These clamps also make wonderful gifts, even for those who don't usually use

Jerry Ernce is a woodworker in Broken Arrow, Oklahoma.

them. Many of mine have been hung on office or den walls as decorations.

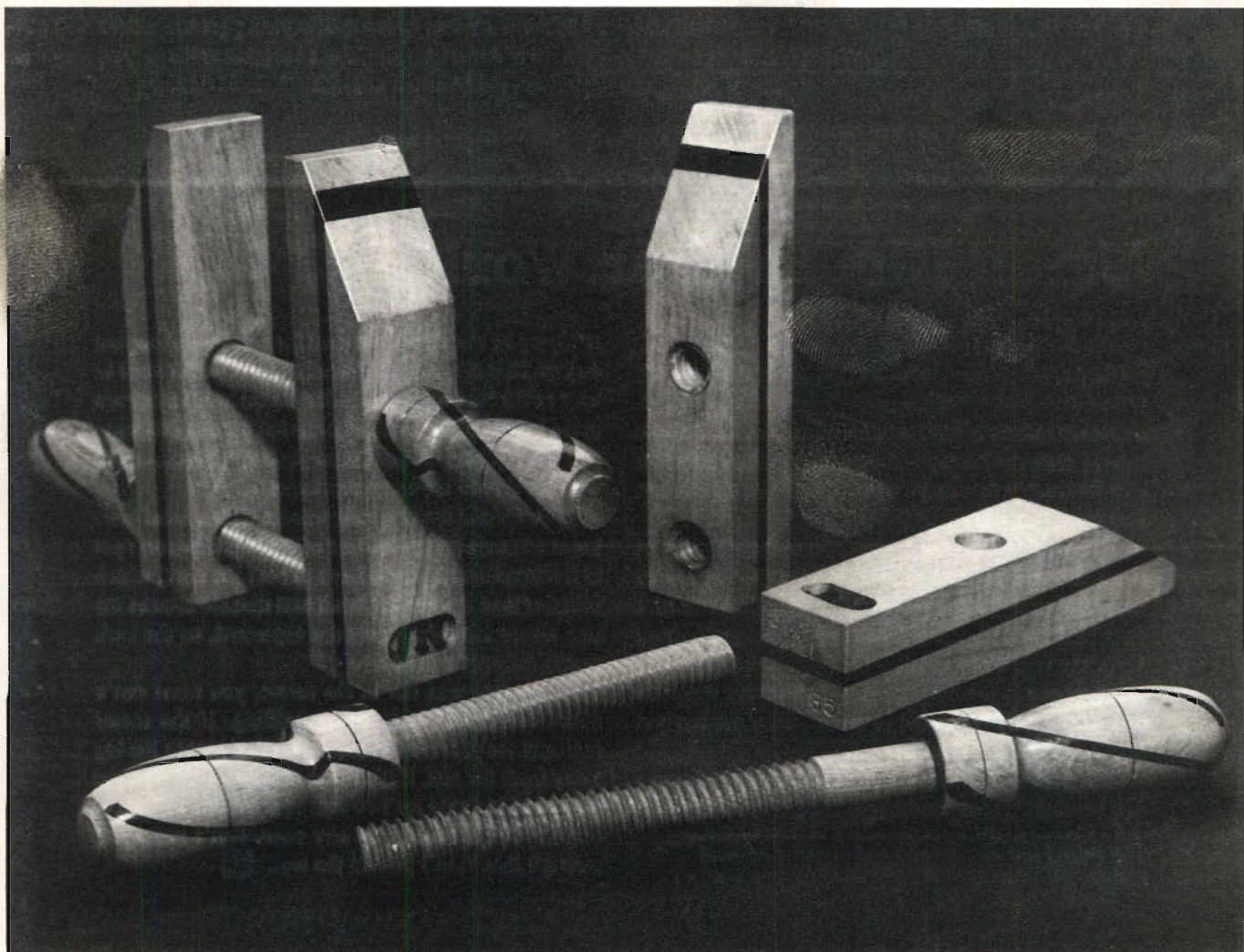
These clamps work differently from the commercially available handscrews; they don't have the bidirectional threads and pivot points that allow clamping of tapered or odd-shaped objects. But they are very strong and will definitely come in handy.

Selecting Material

Hardwoods are a must here, although some are better than others. Oak and maple make good jaws, but I like maple better than oak. I have made some out of poplar and had good luck with it. Poplar is

lighter than the other two and has stood up very well in my shop.

I use standard birch dowels for the threaded members, which are glued into handles which I turn on the lathe. Choose only straight-grained dowels without any sign of knots. A word of caution here: most dowels are oversize. This will have to be corrected before starting to cut the threads. Don't just sand them to size - the abrasive will quickly dull your threadbox. One solution is to drill a 3/4" hole in a scrap of hardwood or a metal plate, and drive the dowels through the hole to properly size them. If you take care in selecting



Deborah Porter

your dowels you can probably avoid this extra step.

The more advanced woodworker may elect to turn the handle and the portion to be threaded as one piece. If so, the last few turns of the threads will have to be cut by hand, since the threadbox knife is set in from the face of the tool and will stop short when it butts against the turned handle.

The Making of Jaws

Start by cutting pairs of jaws to the size and shape shown. Mark the center of the jaws for the center hole, and measure 1" in

from the rear of the clamp to locate the center for the other hole. Only one of the jaws actually has threads. One jaw will have two 5/8" diameter holes in it for the threads, and the other jaw will have one 3/4" clearance hole in the center and a 3/4" hole that stops at 1/2" deep to serve as the bearing surface for the back rod.

Before drilling the threaded jaw, bore 1/16" deep countersink holes with a 7/8" diameter bit, at the hole locations on both sides of the jaw. This will keep the hole from splintering when you tap the threads. Using a drill press to ensure

straight, accurate holes, drill the two 5/8" diameter holes completely through, and carefully tap the holes using a 3/4" diameter tap. Use a lot of wax as you tap the hole, and be sure to back out often to clear the chips as the wax will not let them fall away. It is *very important* that you start absolutely straight into the hole with the tap.

Handles and Threads

Select the material for the handles and drill 3/4" diameter, 2" deep hole in each for the dowels. Turn the handles to whatever shape you prefer, or use the dimen-

Jig Journal

"Turning" on the Table Saw



photo by Hugh Foster

by Gene Bauch

When I make my handscrew clamps, I like to make the threaded rods and handles as one piece. I came up with this table saw jig that makes it possible to use the dado head as a sort of rough lathe. This way I get straighter, truer pieces for threading than I can make on the lathe.

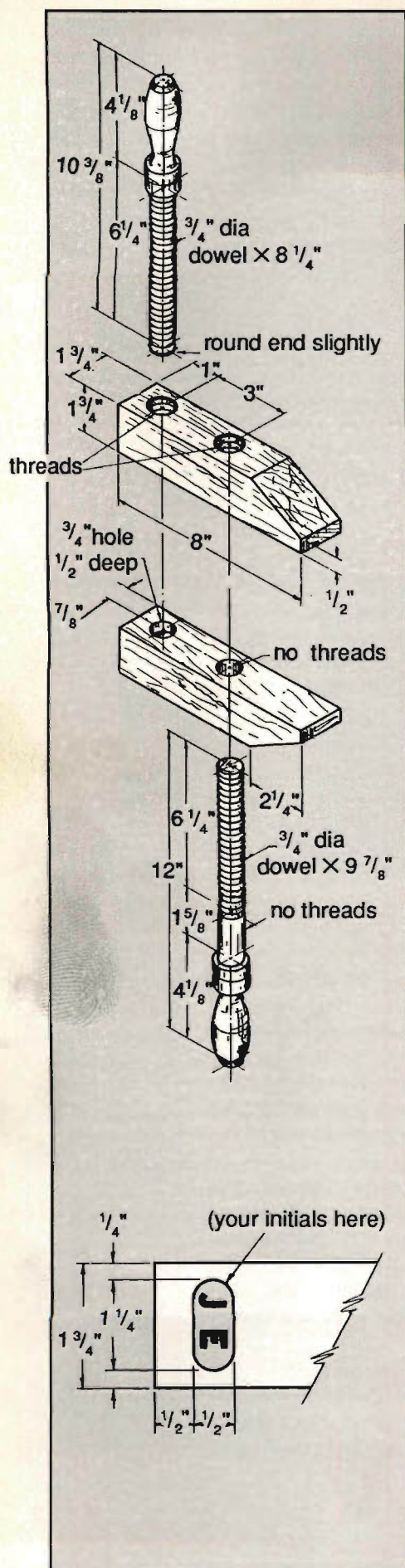
The jig consists of two centers (wood screws) mounted on a pair of sticks fastened to a piece that can be slid side to side against the fence of a standard table saw cut-off box. The jig photographed here was made entirely of scrap stock, so yours needn't look just like it. It is critical to get the screws mounted exactly opposite one another like the centers on a lathe, low enough to the saw's table so that the dado head will reach to cut the threaded portion of the stick to 3/4" diameter.

Use over-long stock for your clamp handles to provide some waste area in which to adjust the depth of cut, and set up the jig's centers at this distance apart. You can turn the handle portion on the lathe, and then just use the jig for the portion to be threaded, or set the dado head to a shallower depth to create the diameter of the handle.

The jig works by hand-turning the stock over the spinning blades as you make one pass (another reason for the extra length), and then sliding the jig sideways as you make consecutive passes.

I've had some problems with chip out when cutting outside threads in dry wood, so I make the clamp parts from green wood. Even wet, some woods still chip out a bit, but if it's not too bad, the clamps will still work fine. At first, the clamps can seem almost too tight and squeaky to turn, but as time passes and they dry a bit, their fit becomes closer to perfect. **PW**

Gene Bauch is a woodworker and tool vendor in Manitowoc, Wisconsin.



sions in the drawing.

Cut the dowels to the proper length, including 2" to fit into the hole in the top handle, and 2" for the bottom handle plus 1 5/8" which will not be threaded, so they'll spin freely in the holes of the bottom jaw. Using a file or a saw, create spiral glue-relief grooves in the 2" portions that will fit into the handles.

To cut the threads you'll need a 3/4" threadbox. I purchased mine from Conover Woodcraft Specialties, 18125 Madison Road, Parkman, Ohio 44080, and have been very pleased with it.

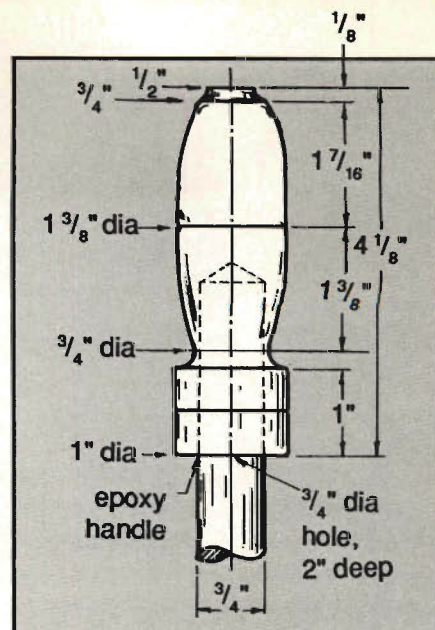
After cutting the threads, glue the dowels into the handles. White or yellow glue will not take the clamping pressure these little clamps will produce, so use epoxy. Work the rods in slowly, allowing the glue to squeeze out. Pushing the dowel in too fast could cause the glue to split the handle.

Finishing

I spray lacquer on my clamps, but any quality finish process will do. Put on three coats of lacquer and steel wool between each coat with #0000 steel wool. Do not steel wool the threads. The lacquer adds some strength to the threads, helps seal them, and keeps the wax from soaking in. Apply wax to the bearing surfaces and threads when the finish is dry; work it in well.

Helpful Hints

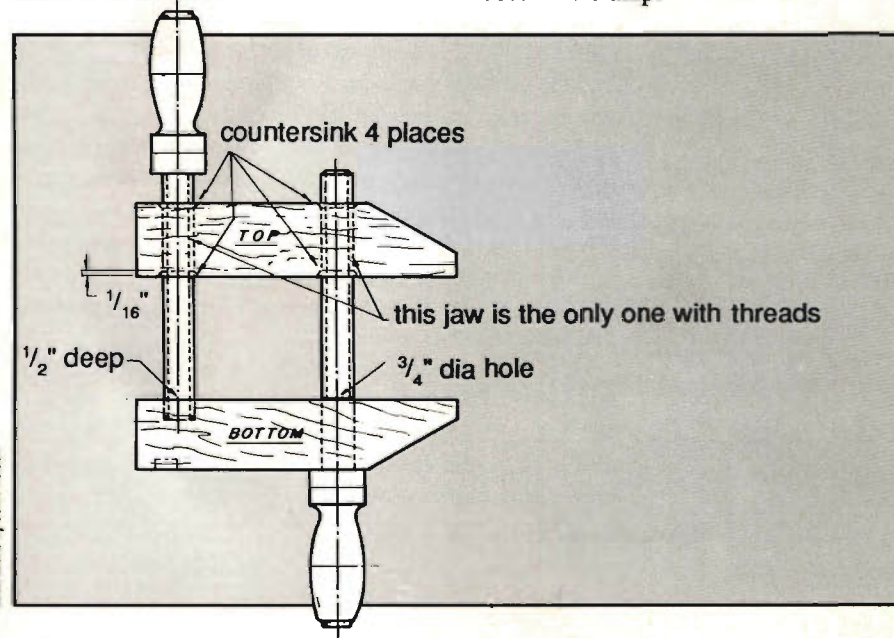
After you have made one or two of these clamps, let your mind go... experiment. By laminating different colors of scrap hardwood together you can make some beautiful clamps. I was asked to make a custom set a while back which I



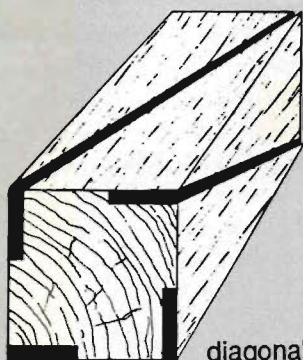
made from rosewood. When I turned the handles, I put a 1" diameter piece of brass tubing on the front of the handles which made a striking set of clamps.

Another nice touch is to add wooden initials in a routed recess in the bottom jaw, as I did on this pair shown in the photos. The letters can be ordered from Paxton's Beautiful Wood Store, 5420 S. 99th E., Tulsa, OK 74146.

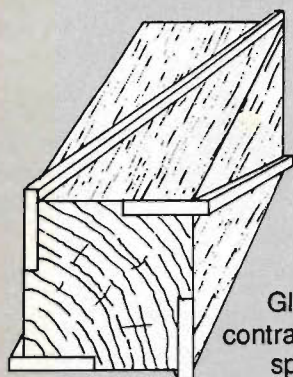
People unfamiliar with this type of clamp may pick them up and start turning just one handle; you must resist this temptation. The jaws of this kind of clamp must remain parallel to one another at all times. To use them, hold the clamp by both handles and spin the jaws open just enough to be placed over your work. Tighten the center handle first and then the end handle. Reverse this procedure to loosen the clamp.



Illustrations by John Nelson



Make diagonal kerfs.



Glue in contrasting splines.



Don't turn too deep.

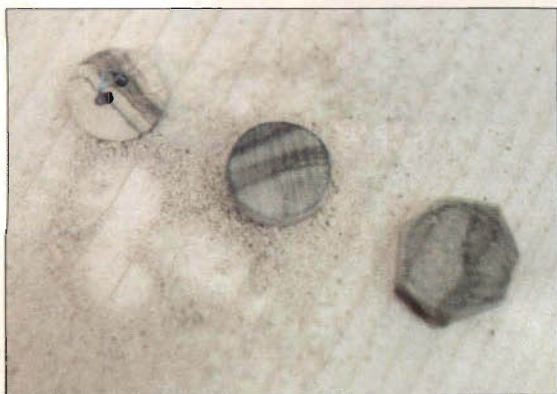
Spiral Inlay Turning

I struck on this technique one day while trying to fill a requirement for a matched set of wood clamps for a very dear friend, John Nelson. John is not only a woodworker but also the author of many books and articles, so I was looking for a way to make them personal and different. The results were beautiful and John seemed pleased to accept the gift.

Select two different woods of contrasting colors. I used maple and padauk. The maple is 1 1/4" square and as long as needed; I find that pieces 4"-6" long give more of a spiral effect. Set your table saw blade to cut 5/8" deep grooves. Use a tapering jig (see *Popular Woodworking* June/July 1986) to cut a slot from corner to corner across each face of the square maple stock. Select a piece of 3/4" thick padauk about 1/2" longer than the maple stock and cut four splines as wide as the slots in the maple. Glue these into the slots with a good coat of glue on all sides. (Epoxy works better than yellow or white glue on oily woods like padauk.) You will note in the drawing that 1/8" sticks up out of the slots allowing a clamp to hold the splines down tight. After the glue has set, cut or sand the block until it is square again, place it in the lathe and turn round. After turning you can see the spiral effect. A word of caution here: your turning design is up to you, but do not cut down the turning so small in the valleys that you cut the padauk splines completely away and lose the spiral effect. **DW**



Deborah Porter



by S. Reed Poverny

You can make wooden buttons anytime, anywhere: while riding on a train, waiting at the airport, or sitting in a laundromat. You need only a board that fits in your lap, a hand drill with a 1/16" bit, files, and some sandpaper. These simple buttons are round, bellied on both sides, and have two holes drilled in them.

Start by sawing out the blanks. The most important consideration here is how the blank is oriented to the grain. A sugar maple blank, for example, oriented with the annual rings perpendicular to the face of the blank (quarter-sawn) will have delicate ray flecks in a circular pattern once the button is

S. Reed Poverny is a wood researcher, woodworker, photographer, and contributing editor to Popular Woodworking.

Orienting the Blank to the Grain

End Grain View of Blank

QUARTER-SAWN



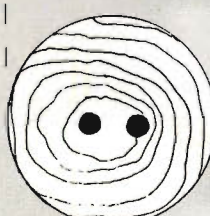
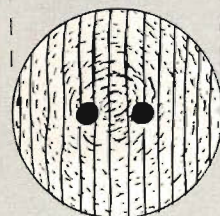
final shape

FLAT-SAWN

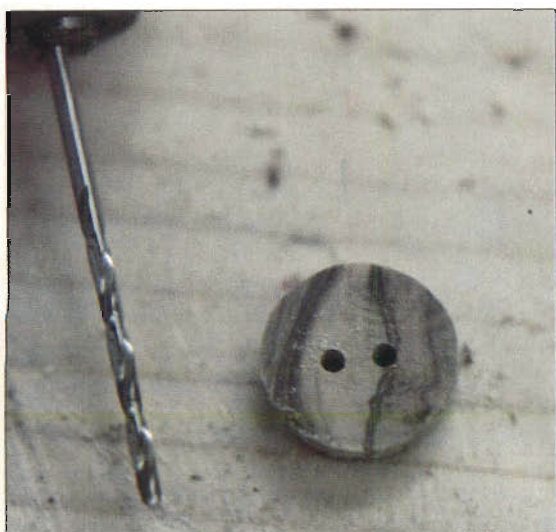


annual rings

Pattern on Face of Button



Wooden



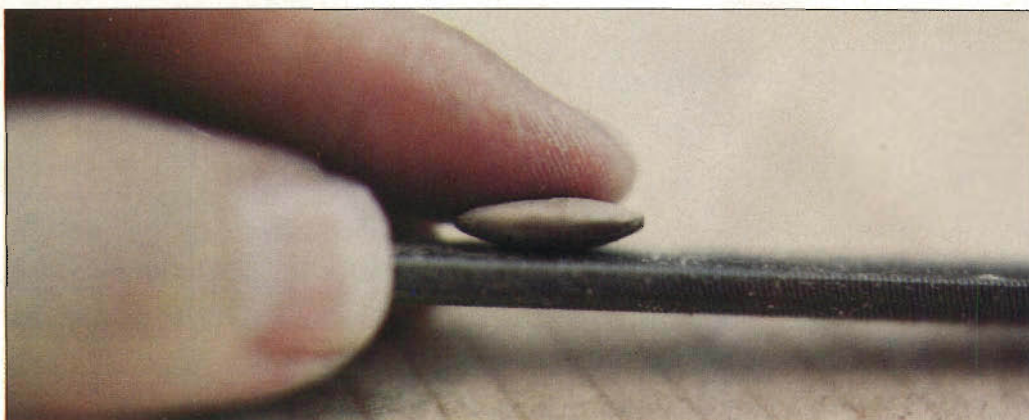
bellied. A partridgewood blank (this is a wood that's extremely dense, with tightly spaced growth rings) oriented with the annual rings parallel to the face of the blank (flat-sawn) will have a pattern of concentric circles once the button is bellied. Saw as many 1/8" blanks as you'll need, staying as close to the final button size as possible.

Using a regular button as a guide, draw the outline of a circle on each of the blanks with a sharp pencil. File off the excess material using a large, second-cut file. Be sure the blank is the size and shape you desire. Determine where you want the two holes to be and make indentations with an awl to guide your drilling.

Hold the blank between your fingers and use a small second-cut file to round over both sides evenly, stopping just before the edge becomes pointed, leaving about a 1/32" flat on the edge. This disappears during sanding. Unless there's a lot of reshaping to be done, start sanding with 220, then 400, and finally finish with 600 grit. Rub it over a cake of beeswax if you wish, or leave it raw; either way, rubbing with a soft cloth will make the button shine.

Having finished your initial set of wooden buttons, you may now find yourself, as I once did, having to learn how to sew them on. **PW**

Buttons



photos and illustrations by the author

Woods that Wash and Wear

By S. Reed Poverny

While not all woods do well in the laundry, there are a dozen I've found that handle it admirably. Wooden buttons should always be snipped off prior to dry cleaning.

Lignum Vitae (C. America) - Means "Life Wood" in English. This material is usually plain, though sometimes hard, heavy, and greasy wood



varies in figure that marbled. A with a soapy texture that works easily. Its high polish is unaffected by washing.

Purpleheart (Guyana) - Hard, porous, and difficult to work. Its vibrant lavender color soon fades to an attractive gray-pink with washing. Frequent washing gives it a nice, a low shine.



Bubinga (Africa) - A dry, hard, and porous orange-pink wood with purple markings. The large flat-sawn pattern is lost on a button, but it's quite pretty on the quarter surface. It has a low polish luster.

South African Olivewood (S. Africa) - An unusually hard and tight variety of olive wood. It is naturally oily, slow working figured in shades of salmon, brown and gold, this wood takes a medium polish which maintains itself through the wash.



Pau Ferro (Brazil) - Also called "ironwood," for a reason. It resembles India rosewood in color, but is much durable. A light rubbing restores the high polish after

It is hard, oily, tight-grained, and denser. It can be toxic for some washing.

ain Mahogany (U.S.A.) - This tree grows wild in the Sierra Nevada mountains. Hard and tight it's often used in place of boxwood for violin tuning pegs. The color varies from blonde to red-brown to dark brown. Rubbing it with a soft cloth after washing restores its low polish.



Blackwood (Africa) - An extremely hard, oily, black wood that is used for clarinets, bagpipes, and oboes. It takes a higher polish than ebony. Though it emerges dull from the wash, it is easily polished again with a soft cloth.

Greenheart (Guyana) - Excellent choice for buttons on swim trunks. This durable wood is much used for wharves and in ship building. Dry, hard, and porous with a plain yellow-green color. It maintains a low polish after washing.



Nua (Vietnam) - A hard, porous, and fibrous wood with a plain gold-yellow color. It is non-oily and has a rough texture that's difficult to work. The tree is a source of gamboge resin which is used to color varnishes. Constant washing gives it a nice, tactile quality.



Sathorn (Burma) - Related to wenge, but tighter grained, heavier, and harder. Pur plish- black in color with a porous, fibrous texture, this wood is used as an ebony substitute in China. It has a particularly decorative pattern on the flat-sawn surface. Its polish is not affected by washing.



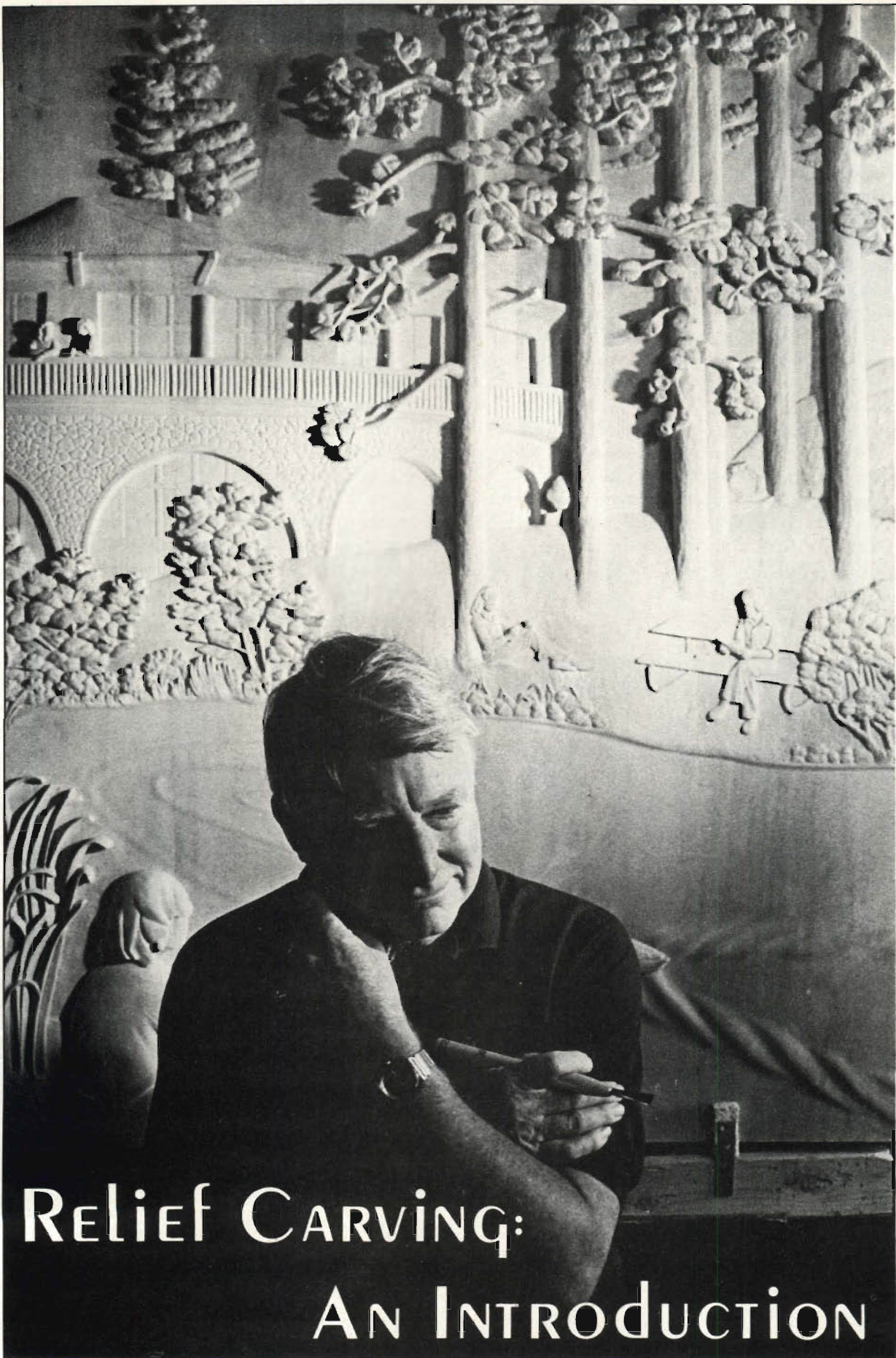
Muhuhu (Africa) - A plain, hard, waxy, tight-grained wood that resembles teak in color. It has a spicy fragrance, works easily, and polishes readily. It maintains a low polish even after washing.



Bocote (Mexico) - A fancy-figured, oily wood with black markings on a yellow background wood is quarter-sawn. It works easily, and a good



which soon darkens to brown. Subtle flecks show up when the polish is quickly restored after laundering. **PW**



RELIEF CARVING: AN INTRODUCTION

Neil Harshman

by William H. McMaster

Relief carving is like making a 3-D photograph in wood. It's a mode of sculpture in which forms and figures are not treated as individual objects, but are attached to a surrounding surface.

The trick is to make the subject appear realistic with only a small thickness of wood to work with. Because of this limited depth, most relief carvings rely on foreshortening to create an optical illusion. This conveys the impression of three-dimensionality. It is accomplished not only in the two-dimensional plane, as in painting, but also by contracting the dimensions of depth that makes objects seem to project into space. For carvings depicting a scene, it is also necessary to use the rules of perspective, especially how they are to be applied in a three-dimensional rendition.

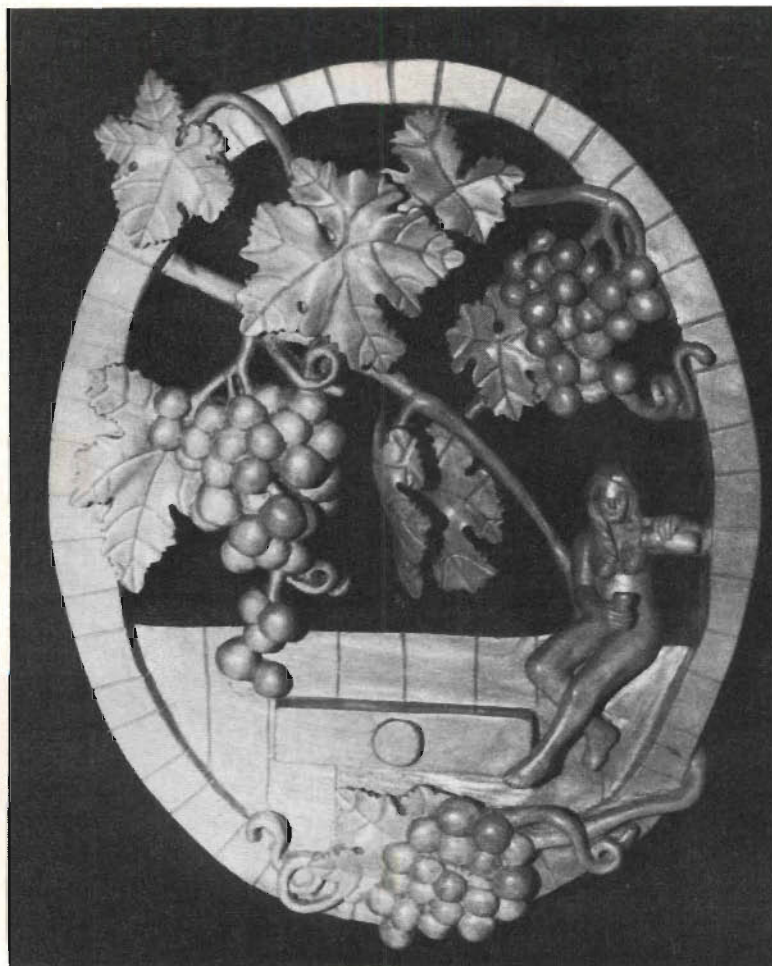
This introductory article will discuss some of the general aspects of this type of carving, and then in subsequent articles we'll discuss the various problems and techniques unique to it. To illustrate these methods I will follow the progress of a large relief panel I carved for Columbia College, near Sonora, California, which will hang in their library.

William H. McMaster is Chief of the Education Division of the California Carvers' Guild. His "Focus on Carving" is a regular feature in PW.

Planning Your Carving

The first decision you must make in planning your carving is to decide on the basic style. The photos on these pages illustrate the raised, sunken, and pierced relief styles. In raised relief the forms project out in front of the background. This is probably the most common style of relief carving and is seen frequently in the floral decoration of picture frames. Sunken relief occurs when the main forms are below the original surface of the wood. The original surface then provides a frame for the carving. This creates a strong outline, and the step-down enhances the shadows. Sunken relief can minimize breakage if you're carving on furniture. In pierced relief some parts of the background are completely removed to leave open areas. This way, the figures can be semi-sculptural, showing more form than would be possible in the other two styles. Pierced relief can be very dramatic and effective, since the open spaces enhance the carving by providing more contrast.

The degree of projection from the background that you decide to use should be appropriate for both your design and the intended use of your relief carving. Do not use high relief on objects that will be used in such a way as to break your carving (such as on furniture). Shallow, or bas relief requires more skill to achieve a realistic rendition because



Pierced relief carving, where part of the background is cut away completely, becomes almost like carving in the round.



of the extreme foreshortening required.

The background should provide a pleasing contrast to the main form. For example, if the main form is smooth, then a textured background will provide the necessary contrast; and for a detailed carving, such as the Indian, a smooth background is best.

Pattern Development

For your pattern you will probably use an original sketch or a picture of some kind. If it's not the same size as your intended carving, then it must either be enlarged or reduced. Use modern photocopying machines or the "enlarged square" method to scale your pattern.

Because of the limited depth of the wood, some regions of the carving will need to be compressed by foreshortening. Technically speaking, this is done by proportionately contracting the figure in the direction of depth. This is more difficult to achieve in the three dimensions of a carving than in the two dimensions of a picture because deviations from direct proportionality must be made (you still have that third dimension). This technique is illustrated in Wally Eck's carving of the old Indian. A future article will discuss in detail the techniques for foreshortening in three dimensions.

Many relief carvings depict a scene, such as the bas relief of

the boy waiting on his suitcase by George Morris. In this case, the carver must use the laws of perspective to present a scene as though viewing it through a window, or in a photograph (more two-dimensional). This perspective is the technique of representing the spatial relationships of objects as they appear to the eye. The result is to give the viewer a distinct impression of distance. The technique was first successfully used by Renaissance sculptor Donatello in his marble sculpture of *Saint George and the Dragon*, circa 1420. In discussing the Columbia Panel, I will describe some of these special techniques.

Once your pattern has been developed, it must be transferred to the wood. This can be done either by using carbon paper or just pasting the pattern on the surface of the wood with rubber cement. I used both techniques for the Columbia Panel; you can still see the paper pattern of the two figures on the right hand side of the panel in the photograph. If you are using the carbon paper method and need to darken any of the transferred lines, do this with a soft graphite or artist's charcoal pencil and not a pen. Never mark on your carving with ink, because it can be absorbed into the grain and ruin your work. To remove pencil marks, use an eraser, not sandpaper. Sandpaper can force graphite particles into the pores of the wood.

When you first transfer your design it is not necessary to put



This sunken relief by Wally Eck illustrates how foreshortening can create an illusion of depth.

The proper use of perspective contributes to the success of this carving by George Morris.



photos by the author

all the details on the wood since most of them will just be carved off in the initial rough carving. Instead, put your detailed pattern onto a clear sheet of plastic. While carving, you can frequently check your progress by laying the transparent pattern directly over your work, and make a direct and accurate one-to-one comparison.

Three-Dimensional Visualization

Relief carvings depend upon three-dimensional visualization by the viewer to be successful. Thus the carver must carefully plan and execute the various techniques to bring about this sense of depth. This involves a knowledge of how people perceive depth, so the carver can mimic these relationships in a limited carving space.

Relief carvings also rely on the effects of lighting. Your cuts will either reflect or absorb light depending upon the source and its angle. The use of shadows is also extremely important in relief carving. Shadows which help provide the three-dimensionality of a form are called *modeling shadows*; whereas, the technique of using light and shade to produce a dramatic effect is known as *chiaroscuro*. Both have their place in the creation of a good relief carving. Your control of light and shadow will either make an effective carving or just another picture in wood.

A key to attaining the effect of three-dimensionality is to make sure there are no flat surfaces on any of the features. All of nature's creations have convex and/or concave surfaces. A flat rendition in a carving will not look right. Even flat, man-made objects must be carved with curved surfaces if they are to be perceived correctly.

The best way to plan for the three-dimensional visualization is to make a clay model. This allows you to study the depth aspects for a carving before it is committed to wood. You can see the foreshortening, the perspective, and the effect of light and shadow that makes a successful carving. For this modeling, I prefer to use #1 Roma Plastilina which is a soft, permanently pliable, oil-based modelling clay available at most art supply stores.

Rough Carving

In developing a carving, we proceed through the rough carving of the entire surface to the final detailing. Wood carving is interactive sculpture, consequently, it is important not to commit yourself prematurely. During the carving, you may uncover a flaw or undesirable grain pattern and want to make a design change. Since all parts of the carving are related, it is best to keep all parts at the same level of advancement. The whole carving is done in steps until the level is reached where it is appropriate to carve the final details. Don't freeze the design too soon; allow yourself some flexibility until the end.

The rough carving of a relief proceeds through six steps that can be subdivided into two categories: defining the carving masses, and modeling them before beginning the detail carving.

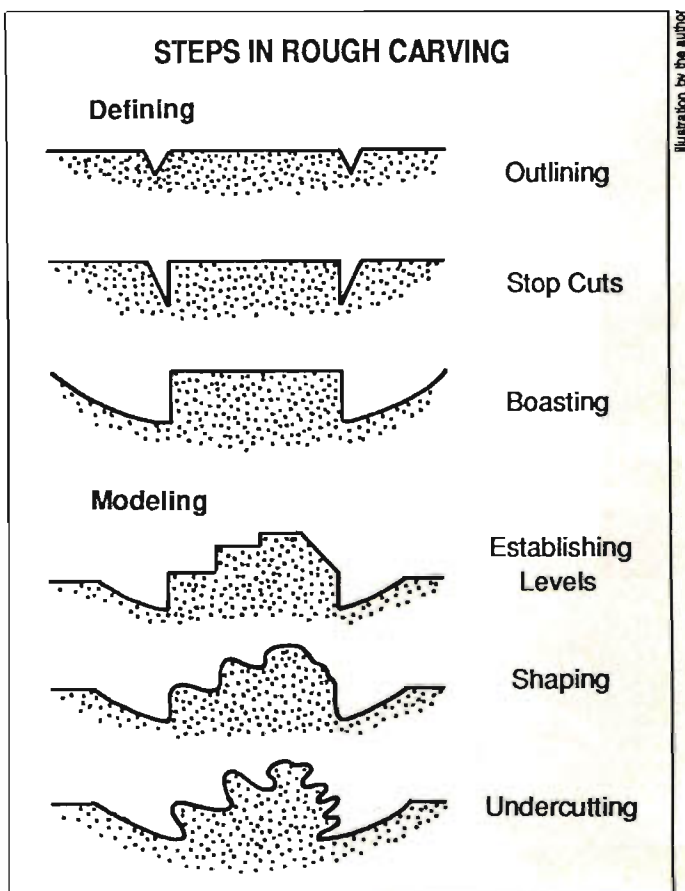
Define the main parts of your design by outlining with a V-tool, staying about one millimeter away from your pattern on the waste side. The next step is to convert the V-cut to a vertical stop-cut using a skew with a slicing motion. This vertical side serves as a stop for your deep gouge cuts when you are boasting out the waste wood.

When doing this initial outlining, just cut around the overall form. Do not cut out indentations or any other details as this makes the subsequent steps more difficult and could also increase the danger of breaking off a small piece.

Once the outline of the design has been clearly defined, you can start on *boasting* the foreground areas by removing the background waste areas. To do this, make a series of parallel cuts with a deep gouge. Cutting across the grain is easier and gives you more control of the gouge. When the desired depth has been reached, then a gouge with a shallow sweep, such as a #3, can be used to obtain a smooth surface. Roughing out should be done layer by layer, especially if the background depth is to be very great.

At this stage in your carving, boast to about one millimeter above your final depth. This will protect the final surface from accidental marring as you proceed. The final smoothing of the background is done during the last stages of your carving.

The next step is to establish the basic levels. This determines



the relationships of the major surfaces to each other and their relative projection according to the view of each object being presented. Looking at your pattern, determine where the high and low points are, and the various levels in between. This step establishes these levels before shaping the basic forms. Do not carve any details at this time. Use your transparent pattern to help put them back in later, after the basic shapes are formed. Putting in details at this stage usually results in a squarish or flat carving which is difficult to correct. You want to form all the basic underlying shapes first. Make sure there are no flat surfaces on any object since these are hard to reshape once detailing has begun.

Once you have the levels and shapes established, you can then start the necessary undercutting before beginning to detail the features.

Detailing

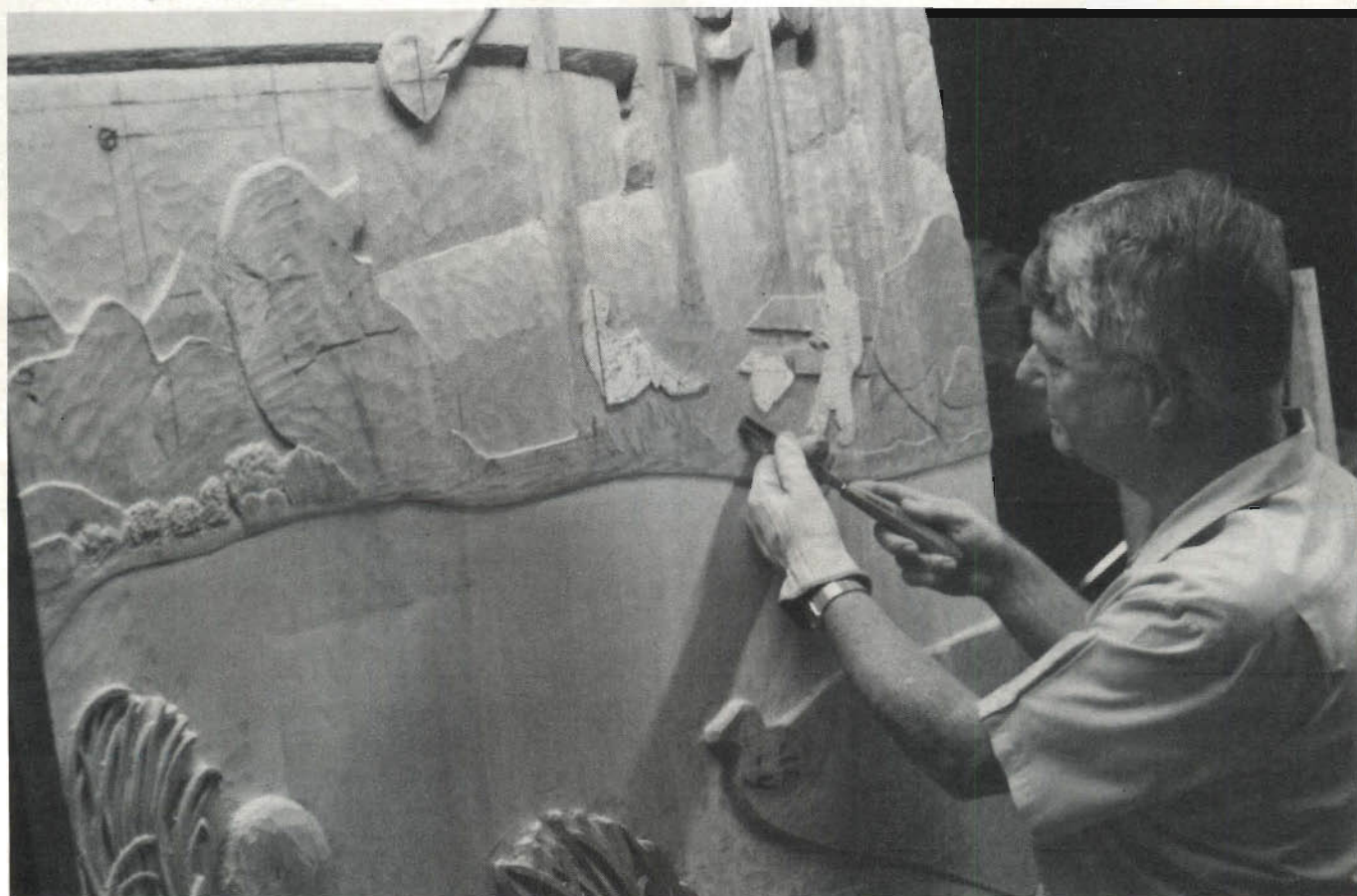
Carving the details is done only when there is nothing else left to carve; it is the last step in all carvings. When detailing, it is better to work in stages all over the carving to keep each part equally advanced than to work on one part at a time and advance it to the neglect of the rest. All parts of a carving are inter-related, and proceeding in this manner helps keep these parts properly related.

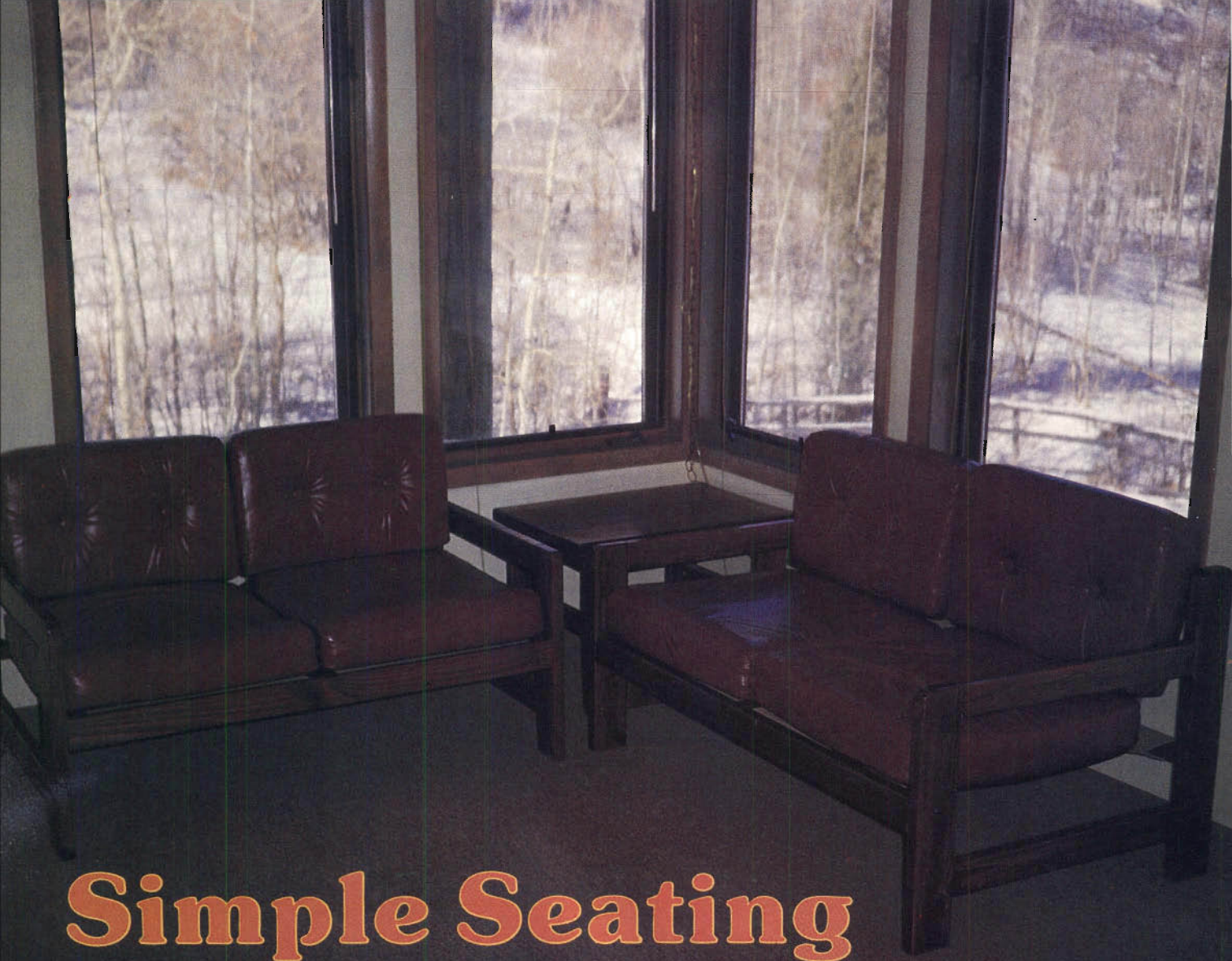
The best way to detail is to frequently stop and look at your carving, then remove that wood which is obviously not needed. If it is in a region where you are not currently working, then go to that new region immediately, lest you forget. It is always best to give priority to those regions obviously in need.

It is also wise to frequently check your progress from a different perspective. One of the best ways to do this is to view your carving in a mirror. Seeing it in a reflection will make any unnoticed errors stand out. Taking a photograph of your carving and then studying the picture will also help you to spot errors that may not have been obvious. Another very effective method is to make a "telescope" by rolling up a sheet of black paper. Viewing your carving through this telescope greatly enhances the contrasts of light and shadow and emphasizes depth perception. If your carving does not pass these three tests to your satisfaction, then you need to work more on the details.

This introductory article on relief carving mentioned the various aspects that will be considered in detail in the next several issues. These discussions will follow the development of the Columbia Panel and show how various aspects of relief carving were handled in this particular project. **PW**

The initial stages of carving the Columbia Panel by Bill McMaster.





Simple Seating

by Sam Allen

Wouldn't it be great to say to visitors that you built everything in the front room of your home? Unfortunately though, you usually have to add the qualifier "except of course, the couch and chairs." Most front room chairs involve so much upholstery work that they're not feasible for woodworkers with little or no upholstery experience. But here is a design for couches and chairs that can be built by the average woodworker. The small amount of upholstery can be farmed out to an upholstery shop or, with a little sewing experience, you can do the entire project yourself.

Sam Allen has been working with wood for more than 20 years and is the author of many books, including Making Cabinets and Built-Ins (Sterling Publishing, New York).

Both the chair (not shown in the photo above) and the couch are constructed in the same manner, the only difference being the length of the stretchers. The cutting list indicates the material you will need for one chair, but includes the dimension for the couch stretchers. This furniture is designed to be built from redwood or fir 2 × 4's. Hardwood lumber can be used if you can get it in 1 1/2" thickness.

Instructions

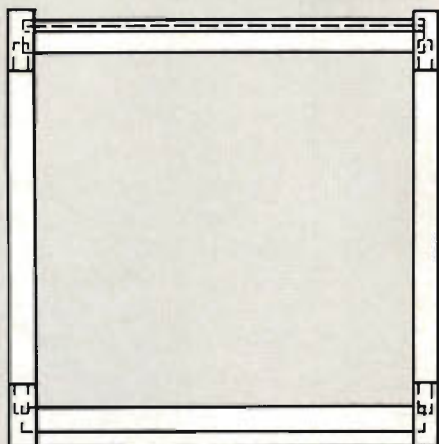
Begin construction by making the end frames. Cut the legs (A and B) and the rails (C) to length. The front legs (B) are about 1" longer than their finished size; they will be trimmed after assembly. The final dimension for the rails (C) includes the tenons. Make the legs from full 2 × 4's, but rip the rails down

to 2 1/2" width.

Next, cut the tenons on the ends of the rails as shown in Figure 1. You can cut them by hand with a back saw (see Issue #30, April/May 1986), or use a dado blade on a table saw.

Lay out the mortises on the legs. The extra 1" at the top of the front leg is to allow extra support for the mortise as it is being cut. If you were to cut the mortise only 1/2" from the end, there would be a tendency for the wood to split as you did the cutting. The first step in making the mortise is to drill two 3/4" holes to a depth of 2" to remove the waste for the mortise. Use a chisel to remove the remaining wood and square up the corners (see Figure 2).

Next, lay out the mortises on the legs for the stretchers on parts D and E. Re-



Chair/Couch

Cutting List

Qty	Part	Rough Size			Piece
		W	T	L [†]	
2	A	1 1/2"	3 1/2"	26"	back legs
2	B	1 1/2"	3 1/2"	*21"	front legs
4	C	1 1/2"	2 1/2"	26 3/4"	rails
2	D	1 1/2"	2 1/2"	24 1/2" - 46 1/2"	back stretchers
1	E	1 1/2"	3 1/2"	24 1/2" - 46 1/2"	front stretcher
1	F	3/4"	3 1/2"	23" - 45"	facing strip

Supplies

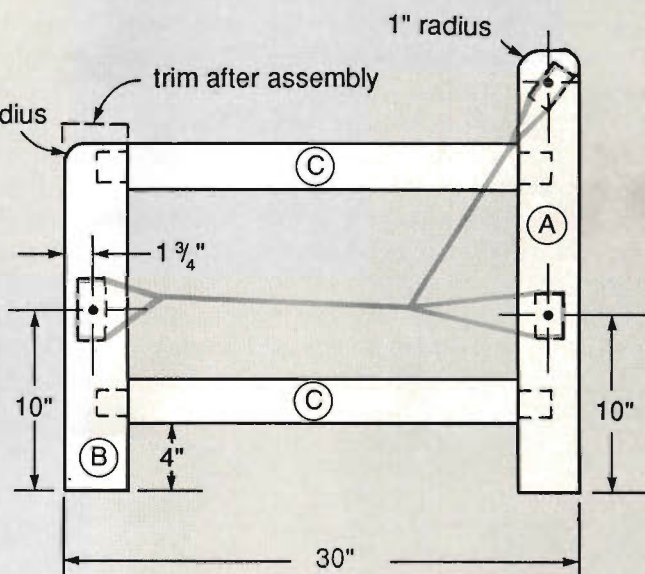
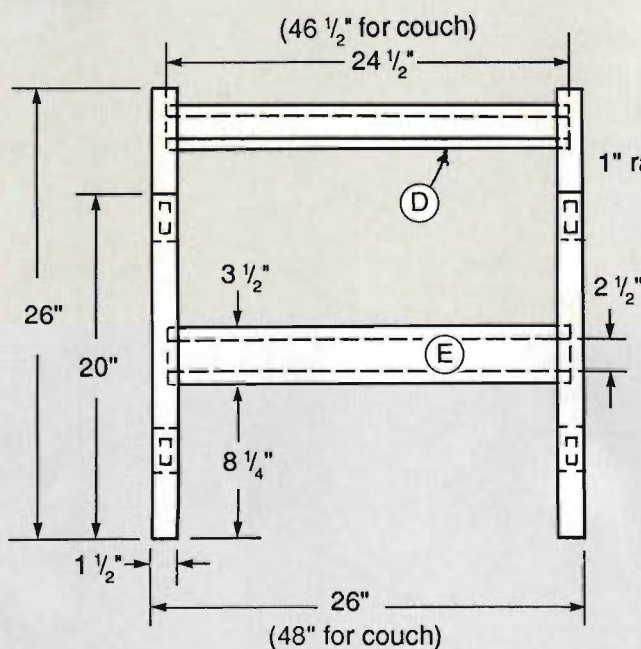
4 #8 X 2" flathead wood screws

6 Minifix fasteners #D5782 from:

The Woodworkers' Store
21801 Industrial Blvd.
Rogers, MN 55374-9514

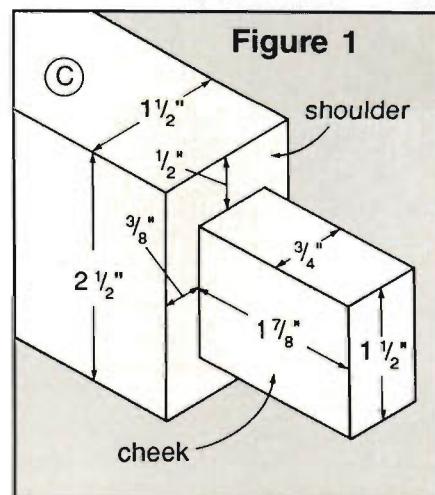
* includes 1" extra to be trimmed off after assembly

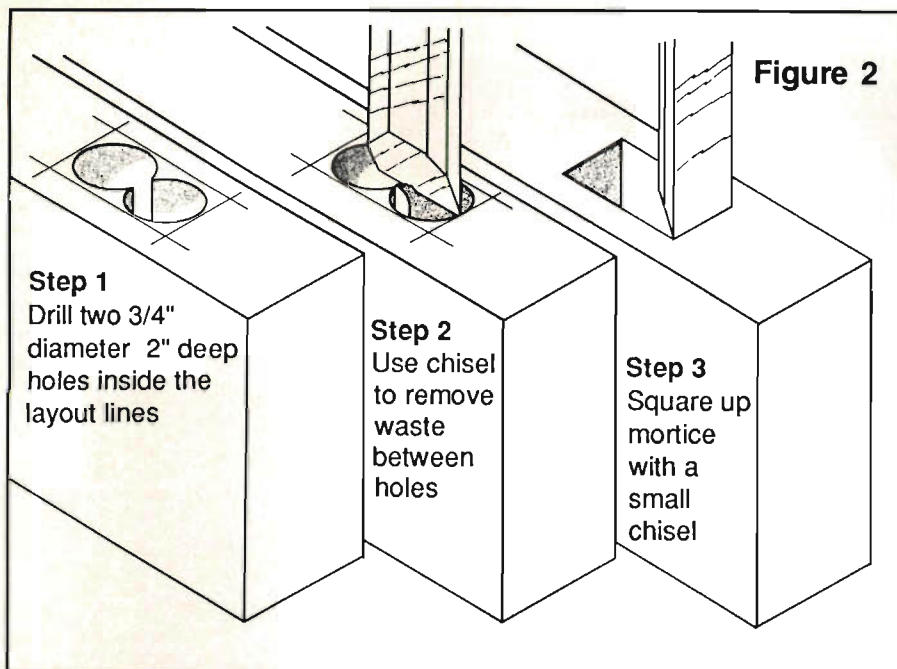
† note: the first dimension is for the chair, the second is for the couch.



member each chair has a left and right end frame, so the mortises must be cut in opposite faces on the matching parts. Also notice in Figure 3 that the top mortise is set at an angle to make the backrest more comfortable. Since these mortises are only 3/4" deep, they can easily be cut with a chisel as shown in Figure 4. First make a stop cut around the edge of the mortise with a wide chisel, then hold the chisel bevel-down at about 45° and make a series of cuts across the grain. The cuts should be about 1/2" to 5/8" deep. Break out the chips, then smooth the bottom of the mortise and bring it to the final 3/4" depth.

If you are making several chairs or couches, it may be more efficient to cut the mortises with a router. Use a hardboard template and a router with a guide bushing. You will need two sizes of templates, one for the front stretchers and one for the rest of the stretchers. The hole in the template will need to be larger than the actual size of the mortise to allow for the guide bushing. Experiment with the bushing and bit combination that fits your router to determine the exact size (Figure 5). Allow plenty of room on the template so it can be clamped to the work without interfering with the router. A good size is 18" long and 6" wide. Lay out





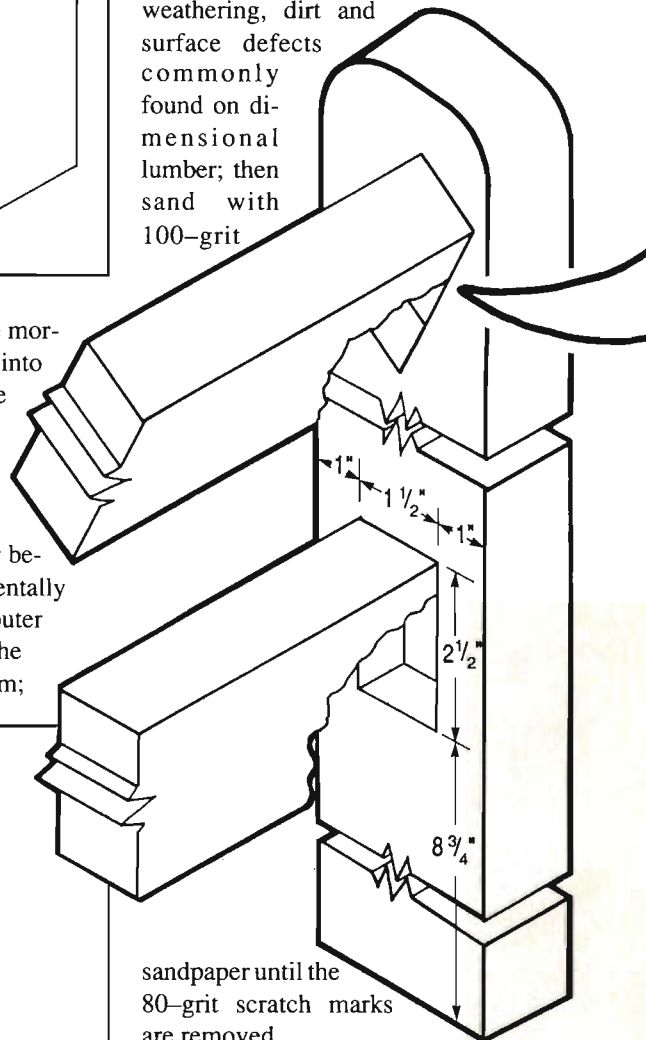
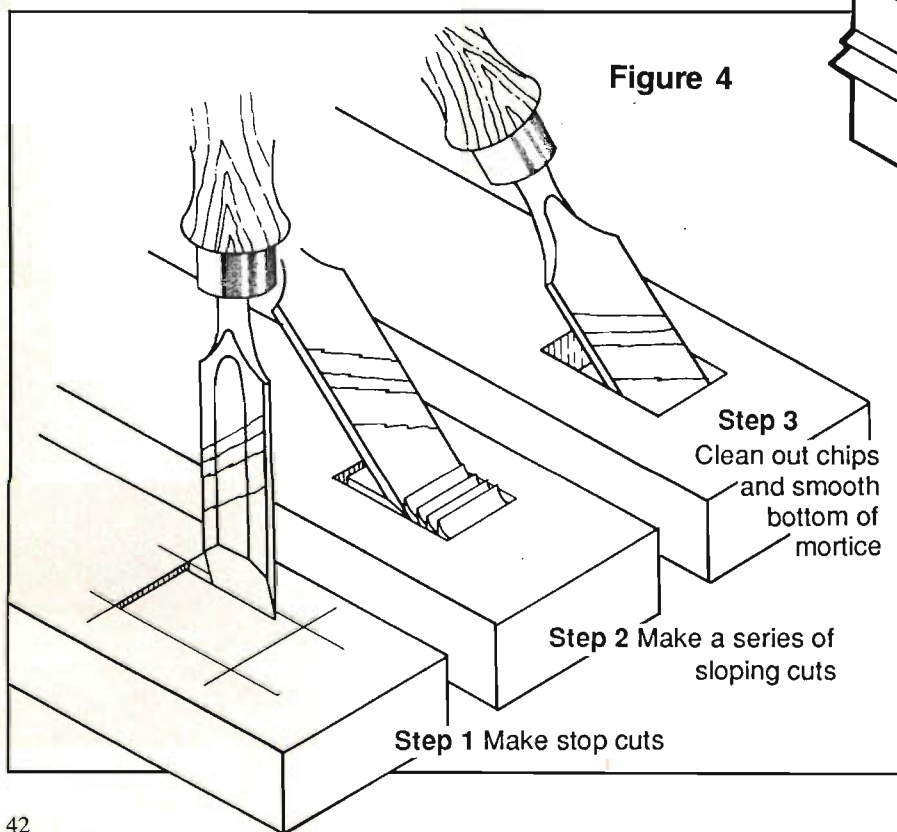
the rectangular hole in the center of the template, drill entrance holes at all four corners, then use a coping saw or a saber saw to cut along the lines. Smooth the sides of the template with a file, otherwise any imperfections will be duplicated in the finished mortise. When you have the template made, clamp it in place over the mortise position. Depending on the type of bit you use and the power of your router, it may be necessary to set the router depth for a shallow cut and make

several passes to complete the mortise. Slowly lower the router into the wood, then work over to the side of the template until the bushing is rubbing against it. Follow the template around the mortise, then clean out the center. Stop the router before lifting it to avoid accidentally damaging the template. The router will leave rounded corners in the mortise. This is not a problem;

actually it will simplify construction because the stretchers will also have rounded edges.

Use a 1/2" radius edge rounding bit to round the edges of the end frames and the stretchers. If the mortises for the stretchers were cut by hand and have square corners, stop rounding the edges of the stretchers at about 1" from each end.

Before assembling the parts, give them an initial sanding with 80-grit sandpaper to remove grade marks, weathering, dirt and surface defects commonly found on dimensional lumber; then sand with 100-grit



sandpaper until the 80-grit scratch marks are removed.

Apply glue to the mortises and tenons and assemble the end frames. When the end frame is dry, trim the top of part B flush with the top rail and then round the top corners of part A and B to a 1" radius using a saber saw or a coping saw.

In order to install and remove the upholstery after the chair is complete, the stretchers must be attached without glue, using fasteners that can be disassembled. The cam fittings specified on the cutting list are very well suited to this purpose. They can be repeatedly disassembled without losing their holding power and

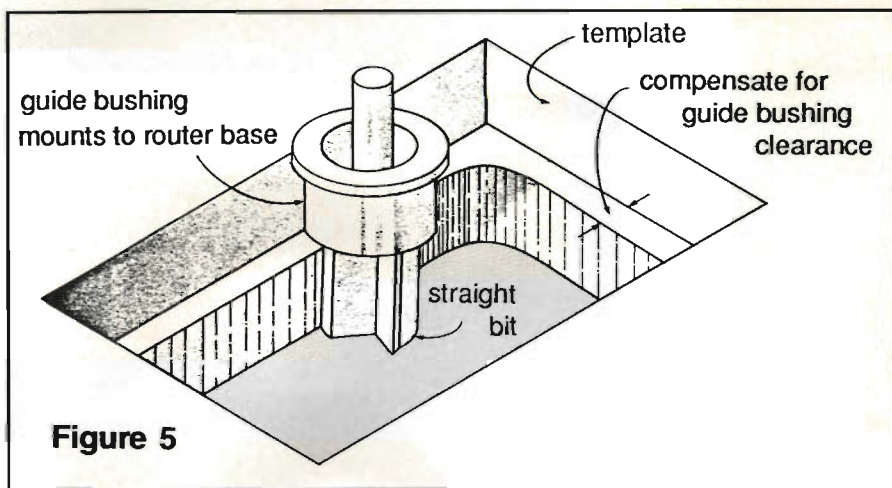
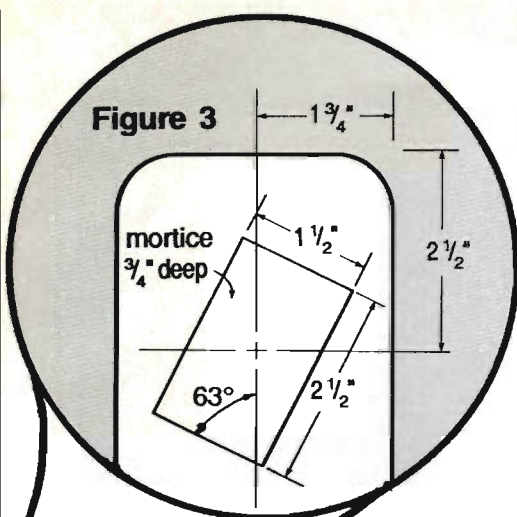


Figure 5

the large bearing surface makes a strong connection. To install these, first drill the hole for the bolt in the center of each mortise; then place the stretcher into the mortise and mark the hole position. Drill the bolt hole into the end of the stretcher to the specified depth in Figure 6. Drill the hole only partway through the stretcher.

Now install the cam fittings and assemble the chair. If everything fits well, trim the front facing strip (F) to the correct length to fit between the front legs and temporarily attach it to the front stretcher (E) with screws driven from the back. Position the two screws near the ends of the stretcher so they will be accessible with the sling installed.

Finishing

Disassemble the chair and sand the parts individually up to 180-grit.

Because redwood and fir are rather soft, the finish must help harden the surface to resist dents and scratches. To accomplish this, I used a thin bodied, clear penetrating oil finish like WATCO® as the first coat. This type of oil will soak deep into the wood and then harden, strengthening the surface of the wood. It will also enhance the color and bring out the natural mellow beauty of the redwood. If you are using fir and want to stain it, first apply a stain that is compatible with the penetrating oil finish, or use a tinted penetrating oil. Follow the oil with two coats of gloss polyurethane varnish and a final coat of satin polyurethane varnish.

Start by applying a full wet coat of penetrating oil; work it into the wood by

rubbing with 220 wet/dry sandpaper. When the surface has absorbed all of the oil, apply more to the surface but don't sand it; let the wood absorb as much oil as possible. Apply additional oil to dry spots until the surface appears to be completely saturated. Let the oil stand several hours until any left on the surface starts to get gummy, then apply some fresh oil to a rag and wipe it over the entire surface to remove any gummy residue. Let the oil cure for at least a week, then give the surface a light sanding with 220-grit sandpaper. Remove all of the dust with a tack cloth.

Apply two

coats of gloss polyurethane varnish, sanding with 400-grit sandpaper between coats. After sanding the second coat and removing the dust, apply the final coat of satin varnish. Be sure to follow the manufacturer's directions on the application of the varnish. Observe the specified drying times between coats and use the same brand for the gloss coats and the final satin coat to assure compatibility. It is also a good idea to test the varnish on a scrap that was treated with penetrating oil to make sure there is no incompatibility between the oil and the varnish.

Upholstery

The upholstery is fairly simple, so if you have access to a sewing machine that is capable of

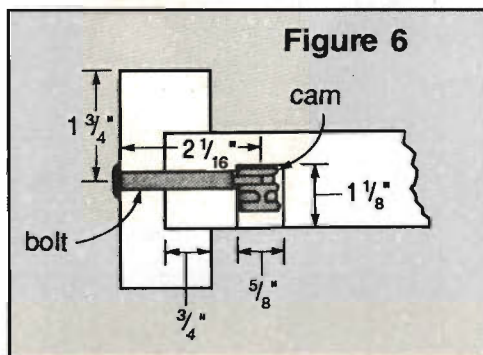
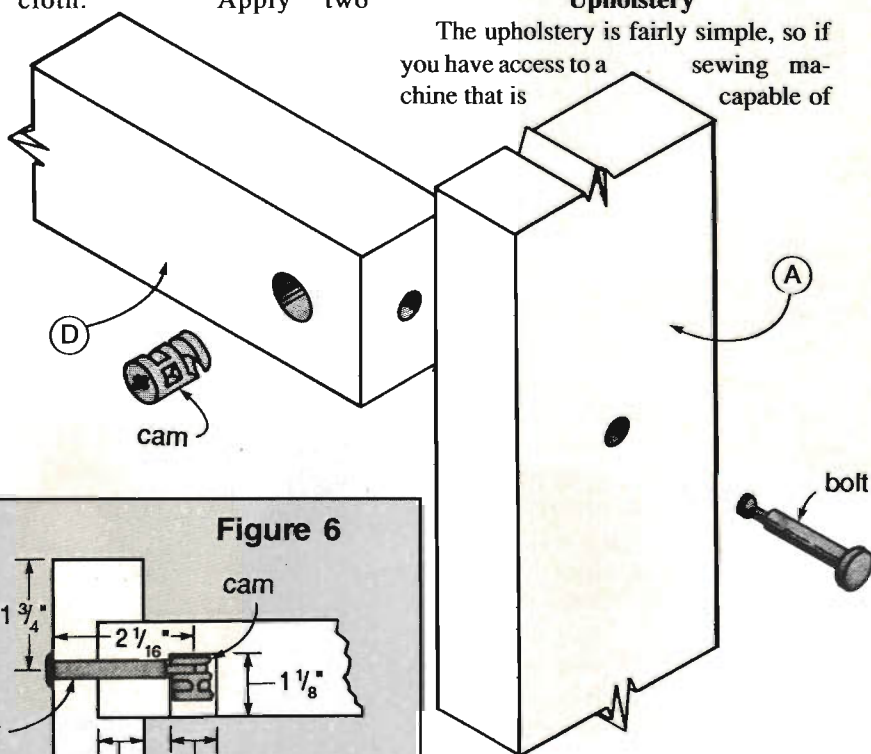


Figure 6

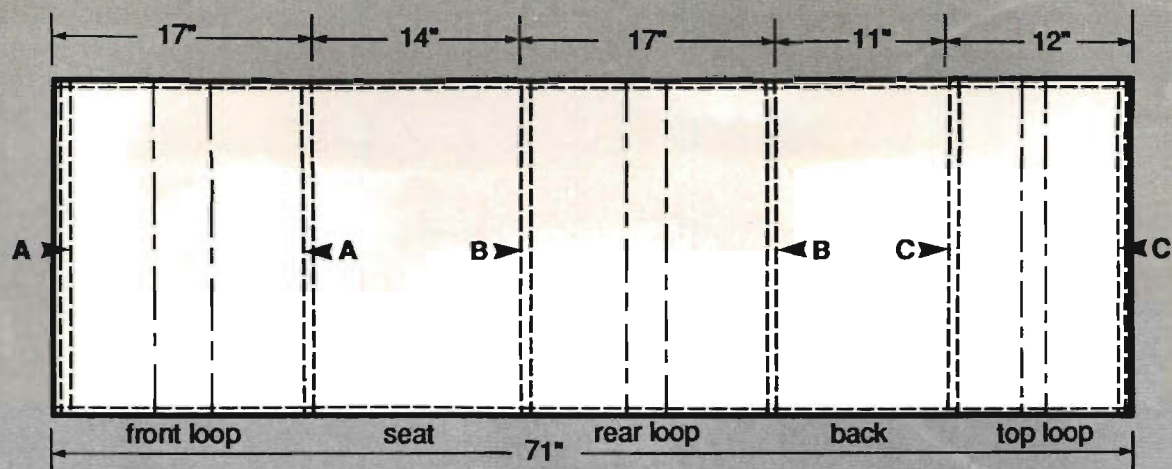


Figure 7

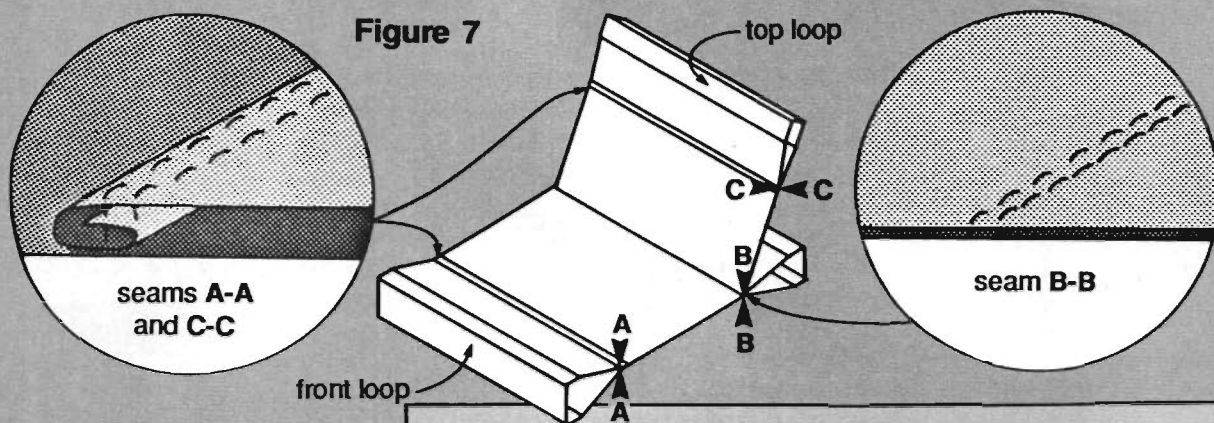
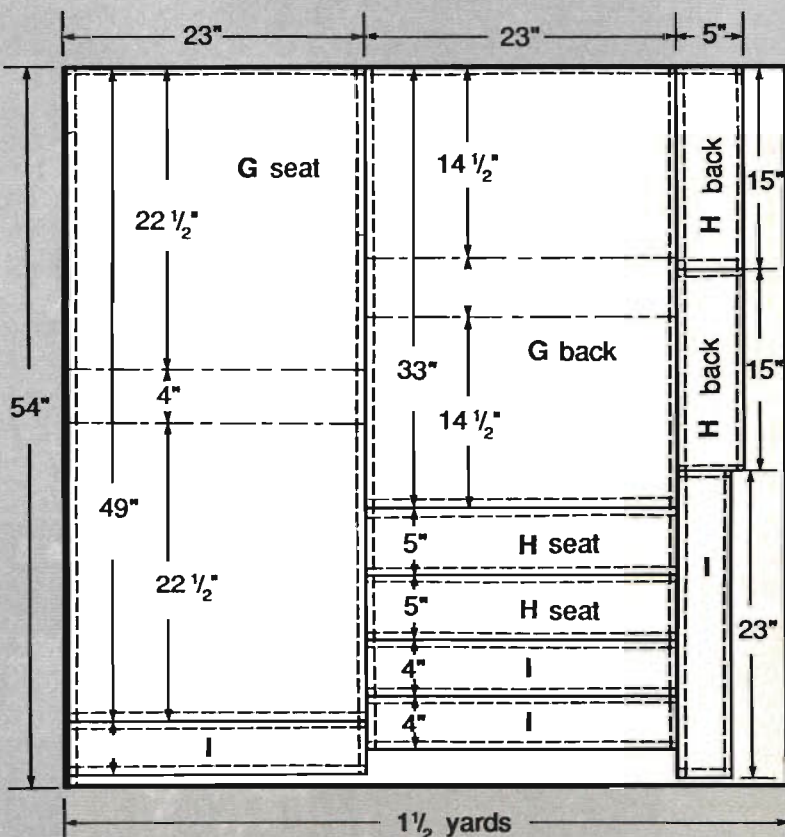


Figure 8



handling heavy fabric, you may want to try it yourself. If you don't want to tackle the upholstery yourself, have it done by a local upholstery shop; or you may be able to find some suitable ready-made cushions. If you want to use ready-made cushions, buy them before starting construction, and modify the dimensions to fit the cushions. The sling that the cushions rest on is not too difficult, so even if you don't feel confident enough to make the cushions, you may want to sew the sling.

The sling is made from a single piece of material that is 71" long and 22" wide for the chair, and 45" wide for the couch (see Figure 7). The sling can be made from any type of upholstery fabric that is not too stretchy and is strong enough to support a person's weight. I used a heavy canvas. The color of the sling can match or contrast with the cushions. Start by

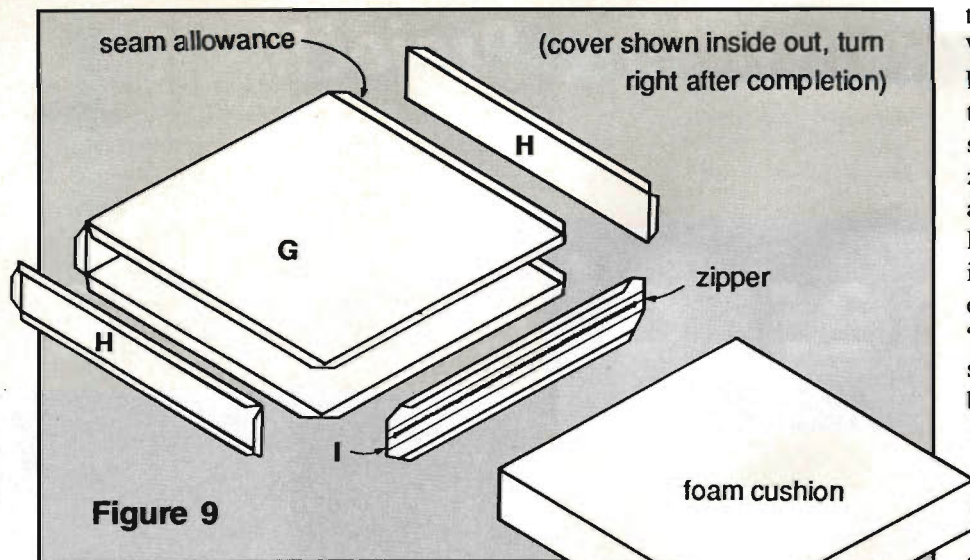


Figure 9

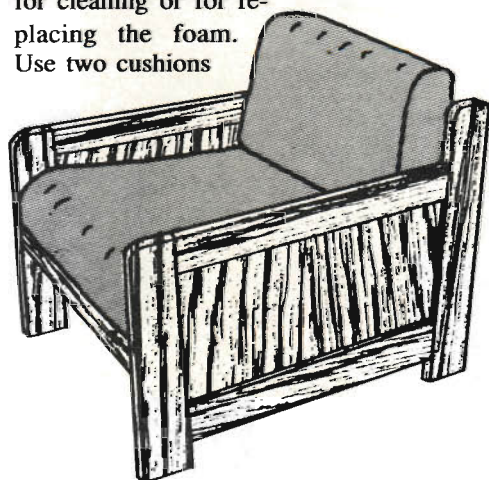
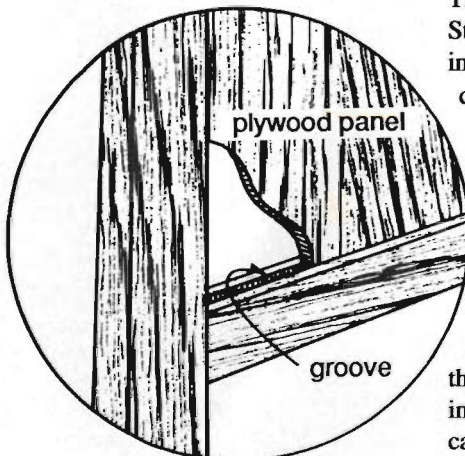
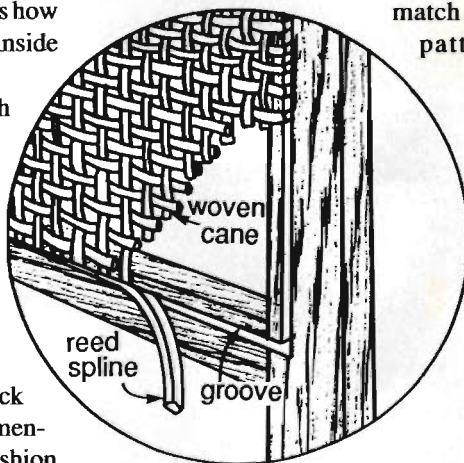
hemming the edges. The finished width of the chair sling is 20", and the couch sling should be 43" after hemming. Fold the material to form the rear loop, and sew the loop together at the point where the two arrowheads labeled **B** meet; then sew the front loop at point **A**, and the top loop at point **C**. The detail on Figure 7 shows how to hide the raw end of the material inside the seam.

When the sling is complete, push the stretchers through the loops and assemble the chair. Put the front facing strip (**F**) in place and drive the screws into it from the back. Drive a few finish nails along the front to further secure the facing strip. Set the nails and fill the holes with matching putty.

Make the cushions from 4" thick foam rubber. Cut the foam to the dimensions given in the cutting list. The cushion cover can be made from any type of upholstery material. Install a zipper along the back of the cover to make it removable for cleaning or for replacing the foam. Use two cushions

side by side for the couch.

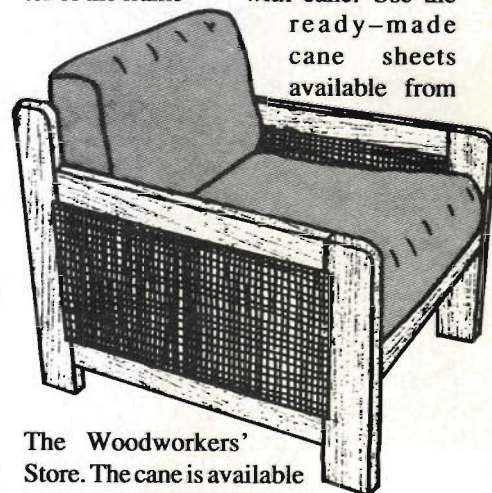
Figure 8 shows how to cut the fabric for one back and one seat cushion from a piece of 54" wide material that is 1-1/2 yards long. This layout works best with material that doesn't have a pronounced pattern. If you wish to match the pattern,



then more material will be necessary. When you have cut out the parts, refer to Figure 9 for assembly. Begin by putting together the back panel of the case consisting of the two parts labeled **I** and the zipper. Turn the edge under where you attach it to the zipper to hide the raw edge. Fold **G** as shown in Figure 9 with the inside of the material out. Sew the two ends **H** in place with their insides out. Cut "V"-shaped notches at the corners as you sew them to prevent the material from bunching up. Finally, sew in the end panel complete with zipper. Before sewing it in all the way, unzip the zipper slightly so you will be able to get it open when the seams are completed; since the inside of the zipper is facing out at this point, you won't be able to get to the pull if it is fully closed. When the cover is finished, unzip the zipper and turn the cover right side out. Pull the cover over the foam cushion and close the zipper.

Variations

This same basic design can be used to make several different styles of chairs simply by modifying the end frames. One simple variation is to cover the open center of the frame with cane. Use the ready-made cane sheets available from



The Woodworkers' Store. The cane is available in several styles. Make a groove for the cane on the outside face of the frame with a router. Complete instructions for installing the cane come with the product.

Another variation is to install plywood panels in the frames. Before assembling the end frames, cut a 1/4" wide groove on the inside edge of the frame members to accept a 1/4" thick plywood panel. During assembly install the panel in the groove. This panel can be finished to match the rest of the wood or it can be covered with upholstery material. **PW**

A Popular Woodworking Project

A Tall Chest of Drawers



by **Hugh Foster**

This modern, neo-Shaker piece is an almost perfect place to show off the beauties of pecan, a gorgeous member of the hickory/walnut family. Pecan is hard and displays a variety of grain, color and figure. It has a terrific aroma in the shop and is comparatively inexpensive.

Some people think that because pecan nutmeats are so much more expensive than walnuts, the same must be true of the wood. Actually, pecan lumber is generally about 40% less than the cost of walnut. Of course, the project would be elegant in any of the fine cabinet hardwoods.

Construction is fairly straightforward. I used a commercial router jig to dovetail the drawers, but joined the carcass with hand-cut dovetails. If hand cutting in panels this large seems too much of a challenge, you could make the sides (A) 1½" shorter and dowel them to the top and bottom.

The first step is to glue up and plane the major carcass panels. You need two side panels (A) that are 20" x 44½" and a top and bottom (B) that are 20" x 31½". After the panels are glued and planed, square them up to these dimensions and mark out the dovetails at the ends.

The dovetails should be laid out so that the tails are on the top and the pins

photo by
the author

Hugh Foster is a furniture designer/builder from Manitowoc, Wisconsin and a contributing editor to PW.

on the sides; this will insure the greatest rigidity of the finished carcass. It is not necessary to lay out the dovetails to be all the same size. Indeed, it is far more decorative to vary the sizes of the dovetails. If you do, be sure to repeat the same pattern of varied sizes at each of the four joints. I started with 1" at each end, added three $\frac{3}{4}$ " marks, a 1" mark, three more $\frac{3}{4}$ " marks, and used what was left as the center dovetail. This was quick and easy to do, and provided some variation from a straight row of machined-looking dovetails. If you like, you can vary the pattern even more imaginatively than that.

Cut and chop the pins and use them to mark out the tails on the top and bottom. When both halves of the dovetails are ready, glue the carcass together being very certain that it's square.

While the glue is setting, cut out the base pieces (C and D) and dovetail them together. That should take roughly the same time it takes for the glue to set on the carcass.

Clean up the joints inside and out, and lay the carcass down on its front. Rout a $\frac{1}{4}$ " deep, $\frac{3}{8}$ " wide rabbet all the

way around the back, and square the corners with a chisel; this is the inset for the back (E).

The Drawer Supports

The drawers ride on a rail/frame assembly that fits into $\frac{3}{8}$ " deep x $\frac{3}{4}$ " wide dados in the sides of the carcass. Rather than rout these dados before assembly, I find that they are more accurate if routed relative to the assembled carcass. To do this, lay the carcass on its side and use a spacer board against the bottom to guide the router.

The bottom edge of the first dado should be $8\frac{1}{2}$ " from the inside bottom of the carcass, so cut a spacer that is $8\frac{1}{2}$ " minus the distance from the bit to the edge of the router base.

To rout the next dado, fit a $\frac{3}{4}$ " thick board into the first and put a spacer against it. For these next three, the bottom of the dado should be $7\frac{3}{4}$ " away from the top of the one below it, so you'll need another spacer that is $\frac{3}{4}$ " narrower than your first one.

All of these dados should stop $\frac{3}{4}$ " from the front edge, so scribe a line and be sure not to rout past it. Use a chisel

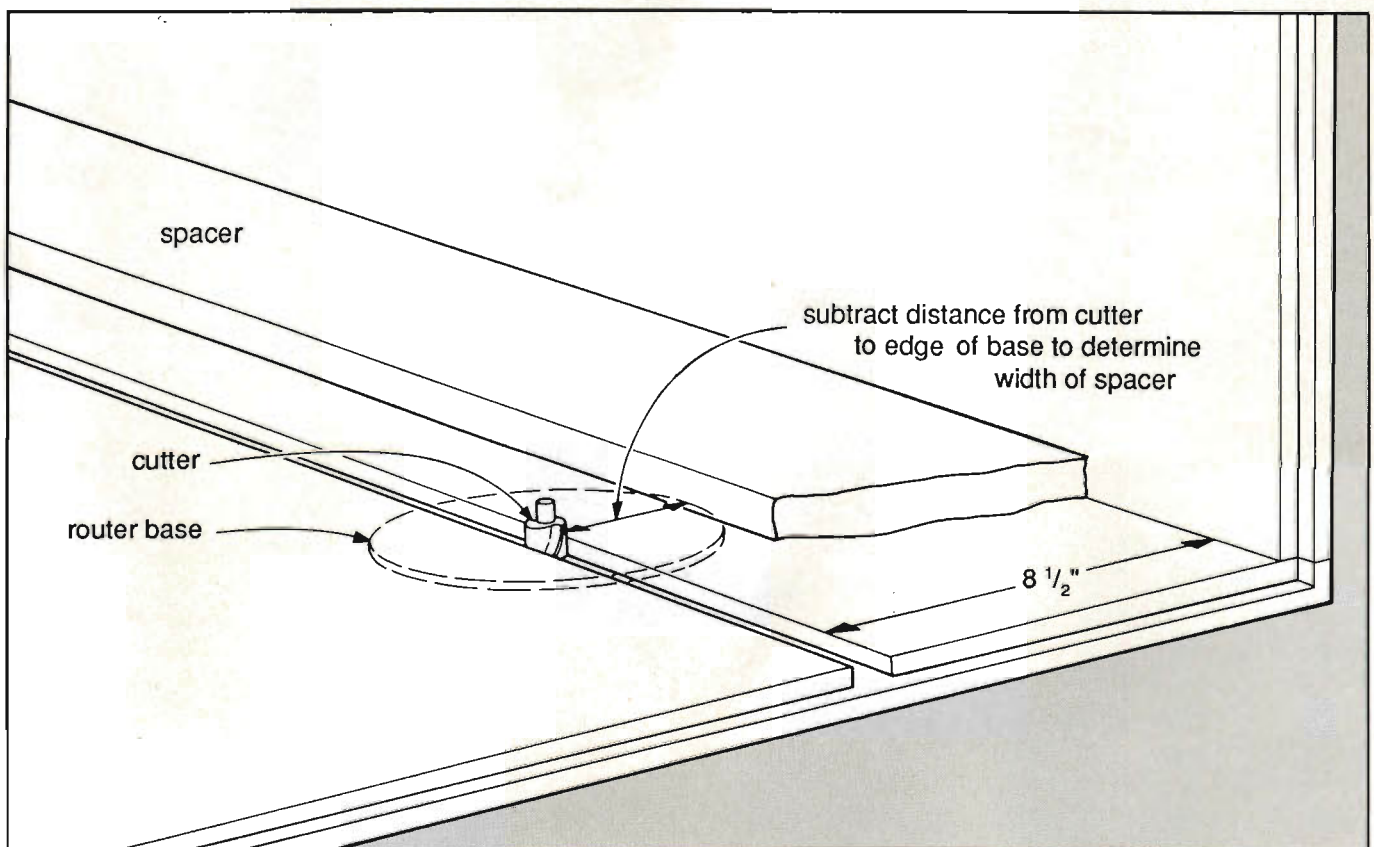
to square the corners after all the slots are routed.

Frames made up of a front and back rail (F and G) and two side rails (H) fit into these slots, and they support the drawers. I chose to make the back rails (G) and the side rails from an even less expensive secondary wood, but stayed with pecan for the front rails.

The side rails (H) are $16\frac{1}{2}$ " long to allow for a 1" tenon on each end. They should measure $14\frac{1}{2}$ " from shoulder to shoulder and fit into mortises in the front and back rails. Glue and assemble the frames *in place* by sliding the front rail into position, fitting the side rails into their mortises and dados, and then attaching the back rails. Make sure they clear the rabbet you cut for the back.

The rails that support the top drawers should also have a center rail (J) mortised and tenoned in place in the middle of the front and back rails. The divider between the two drawers will rest on this piece.

The divider itself is another frame made up of front (K) and back (L) dividers and the two remaining side



rails (H). It should be glued in place (dead center) to the top (B) and the center rail (J).

Making the Drawers

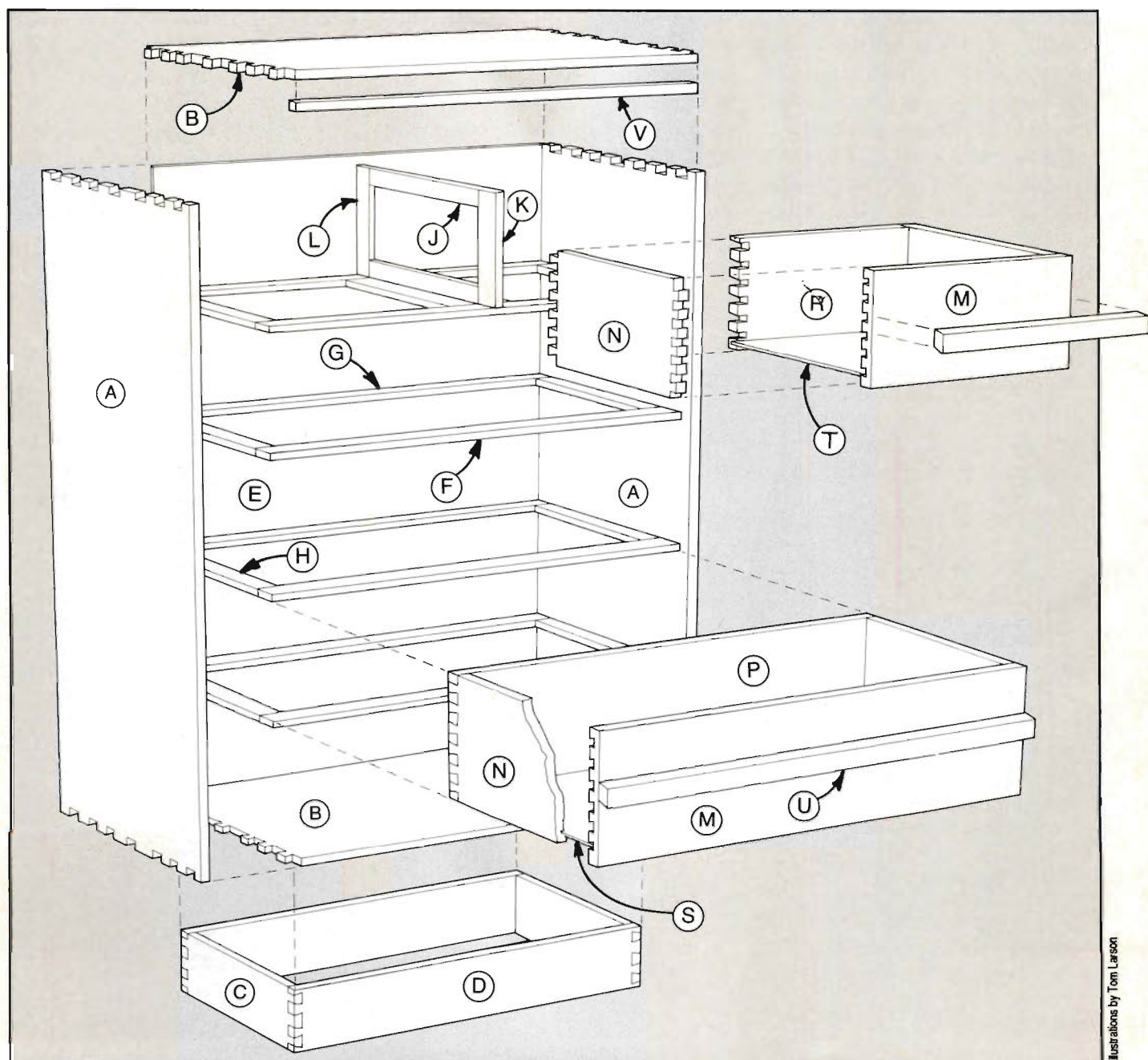
The drawers are designed in such a way that they cover the rail system. It was also my intent to lay out the front panels of the chest to go together nicely. For instance, the two top drawer fronts were first milled as a single piece (M) and then cut in half. If you can lay out the rest of the drawer fronts with a repeating grain pattern, you will

be much happier with the finished product.

Once again, I used secondary wood for the drawer sides (N and O) and backs (P, Q and R). The length of the drawer backs are $\frac{1}{8}$ " shorter than the fronts so that the drawers will slide easily in and out of the carcass. The width of the drawer sides as shown in the cutting list is $\frac{1}{8}$ " narrower than the fronts to fit smoothly between the $\frac{1}{4}$ " rails. When first cutting these pieces, make the sides $\frac{1}{8}$ " wider than the dimension given and the backs $\frac{1}{4}$ " wider. That way

you can reference the dovetails and the slot for the drawer bottoms off the top edge.

Use a dovetailing jig with your router, or else hand cut half-blind dovetails to attach the sides to the fronts and use through dovetails to attach the backs. In order for the two top drawers to cover the center divider, you will need to cut the half-blind dovetails an extra $\frac{3}{8}$ " deep. After all the joints are cut and test fitted, rout a $\frac{1}{8}$ " wide x $\frac{3}{8}$ " deep groove for the bottoms (S and T). Since it doesn't overlap a front rail, this



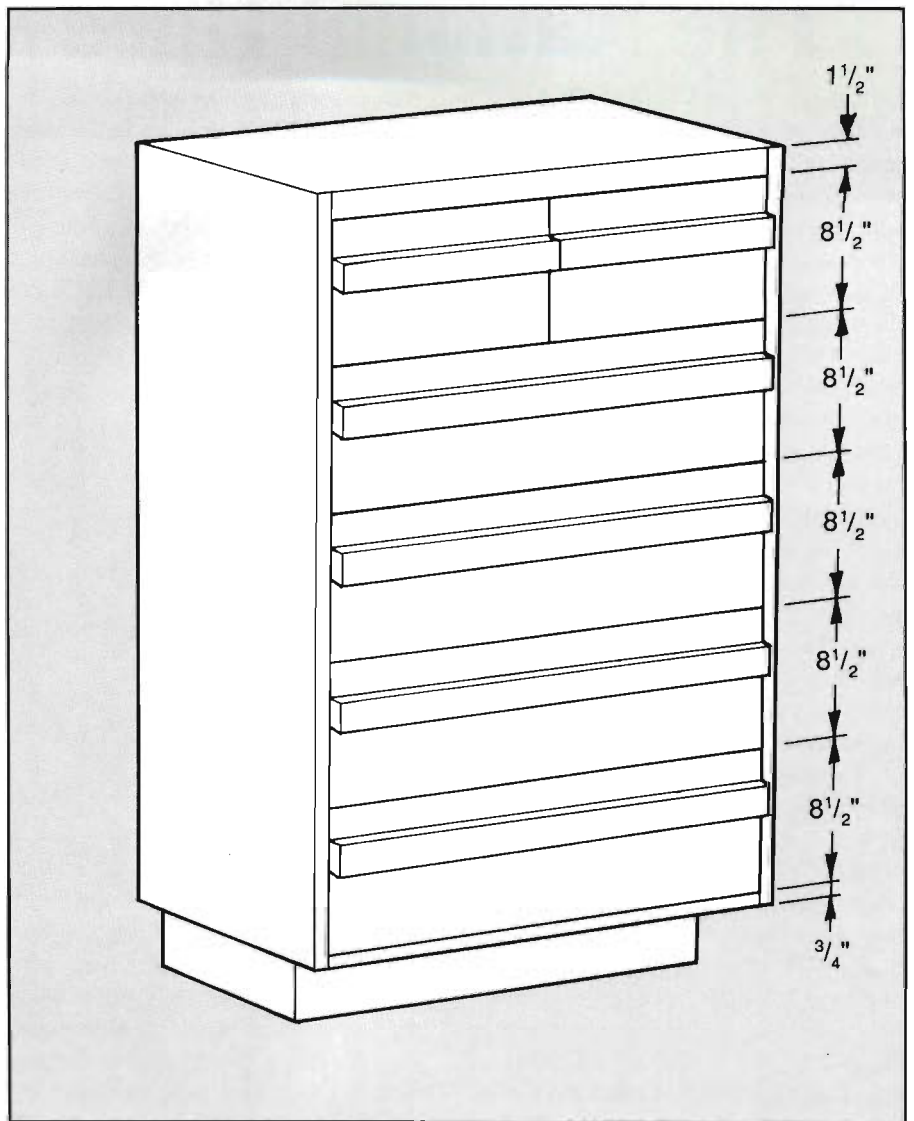
groove should be located 8" from the top edge of the bottom drawer. The rest of the drawers do overlap, so the groove should be 7¼" from the top. Cut the same groove in the drawer fronts (M), but be sure to stop the cut ⅜" from the ends. When this is completed, rip the excess off the top edges of the sides and backs so that the drawers will operate smoothly.

When the drawers are sanded smooth enough to accept a finish, mount your pulls. If you cannot find suitable or affordable commercial pulls, the wooden

Tall Chest of Drawers					
Cutting List					
Qty.	Part	Finished Size			Piece
		T	W	L	
2	A	¾"	20"	44¾"	sides
2	B	¾"	20"	31¾"	top & bottom
2	C	¾"	4½"	16"	base ends
2	D	¾"	4½"	27¾"	base sides
1	E	¼"	31"	44"	back
4	F	¾"	2½"	31"	front rails
4	G	¾"	2"	31"	back rails
10	H	¾"	2"	16½"	side rails
1	J	¾"	4"	16½"	center rail
1	K	¾"	2½"	8½"	front divider
1	L	¾"	2"	8½"	back divider
5	M	¾"	8½"	30¼"	drawer fronts
10	N	¾"	*7⅞"	19"	drawer sides
2	O	¾"	*8⅜"	19"	bottom drawer sides
4	P	¾"	†7½"	30⅞"	drawer backs
1	Q	¾"	†8¼"	30⅞"	bottom drawer back
2	R	¾"	†7½"	14⅞"	top drawer backs
4	S	⅛"	18¼"	29⅜"	drawer bottoms
2	T	⅛"	18¼"	13⅜"	top drawer bottoms
5	U	¾"	2"	30¼"	drawer pulls
1	V	¾"	¾"	30¼"	lip

* Cut these pieces ⅛" wider at first. After cutting the joints and the groove for the bottom, rip the ⅛" off the top edge.

† Cut these pieces ¼" wider and trim to finished size later.



ones I made (U) are attractive, functional and inexpensive. Make them by cutting five strips 30½" long x 2" wide. Rip one edge of each strip at 20° and the other edge at 30°. Crosscut each end of each piece at 20°. Sand or scrape smooth, and apply them 2" from the top of each drawer front with glue and a pair of flat head wood screws driven from the inside.

Cut a ¾" x ¾" lip (V) and glue it to the underside of the top (B). Glue and tack the back in place. Attach the base by drilling some angled holes through it into the bottom, and secure it with screws.

Smooth the whole project through 220 grit or careful scraping, and apply your finish. The outsides of my unit received one application of 50% dark walnut and 50% natural Watco® oil,

followed by one application of natural Watco® oil. This is followed by a waxing schedule that asks for one application of Goddard's® fine cabinet wax per day for a week, once a week for a month, once a month for a year, and once a year for all eternity. This much waxing may not be necessary at the outset, but it does put a client in a frame of mind to properly care for expensive custom-built furniture. The insides of the drawers would smell if this schedule were followed, so I applied a couple coats of lemon oil to the inner portion. The outsides of the drawers and insides of the carcass were rubbed with stick paraffin for smoothest drawer operation.

When these steps have been completed, it's time to decide which drawer you're going to put your socks in. **PW**

The National Hardware Show

by Hugh Foster

One of the reasons you read this magazine is to find out what's new in the way of tools, finishing materials, project supplies, and ideas. To help supply that information, I spent a most rewarding Monday at the National Hardware Show on August 10. This is *the* big wholesale show for the hardware and tool industry. With 8 huge halls, 800,000 square feet of floor space, 3,000 exhibitors, and 70,000 visitors (all of whom had to be invited since the show is not open to the general public), one would have to be there for upwards of fifty hours just to spend one minute at each booth.

This is definitely a story about big business; one of the manufacturers suggests there are well over 100,000,000 electric drills in some degree of use in the United States. Finding new ways of selling tools and supplies to the nearly 50% of us Americans who "do it ourselves" brought out a real crowd. Forewarning you that my report will be incomplete (having spent *more than a minute* in each of the booths) and biased, here's some of what I saw in the two halls I visited:

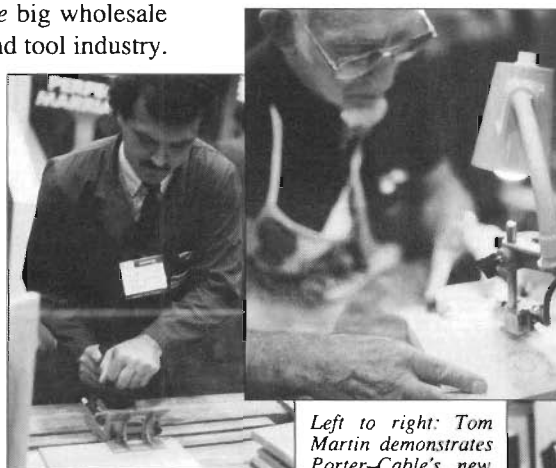
At the Porter Cable booth I saw a demonstration of their model 555 plate joiner - you may recall I tried to buy the prototype ("Is There a Plate Joiner in Your Future?" June/July 1987). Now you can buy an even better production model. Next to Porter-Cable was their sister company, Delta. They were showing a number of new (to me) products. Their 18" scroll saw has been advertised for at least a year, but this was the first time I've seen it in action. "Fergie," the demonstrator, really made it look easy to operate with precision, and of course, he *said* it was.

Black and Decker's most noteworthy new tool appears to be the DeWalt 8-1/2" miter saw (model #1707) which features outstanding dust extraction, many positive stops, a quiet motor, clean accurate bevel cuts, and much greater cutting

Hugh Foster is PW's roving reporter.

width than most power miter boxes.

The best gimmick I saw at the show was a small red gift box which said "Bosch makes this better than anyone else." What was in the box? Sawdust. In their booth Bosch was demonstrating, among other new products, the 1273 DVS



photos by the author

Left to right: Tom Martin demonstrates Porter-Cable's new plate joiner, "Fergie" cuts froggies on the Delta scroll saw and Gary Compton shows off the new Bosch belt sander.

dustless, variable speed 4" X 24" belt sander. This large, powerful and relatively quiet sander merits serious attention. Another, Ryobi's brand new electronic 3" X 21" sander, model #321, features a sanding frame and tool grinding attachment as inexpensive optional equipment.

SKIL, Makita, and others appear to be making major commitments to battery-powered tools; besides screwdrivers and drills, I'm seeing jig saws, circular saws, sanders, and even small routers. Panasonic, new to the US tool market, and Dremel, new to the cordless market (with their "Free Wheeler" cordless roto-tool), claim their improved tool batteries have no memories. What this may mean is a permanent solution to the most vexing problem that has plagued battery tools. Until now, nickel cadmium batteries have "remembered" how long they have been used, and a person who recharges a battery after fifteen minutes of use would soon have a tool with a fifteen minute life-span. Does this mean, as they suggest, that we will be able to use a battery tool for three minutes and then return it to the charger stand so the next time we need it, we will be able to pick up a fully charged tool? Expect to see more about the whole

idea of woodworking with battery power in *Popular Woodworking* in the coming months.

For years I've used a small E-ZE LAP fine diamond paddle to touch up my planer blades before each day's use. Now this manufacturer is showing an 8" X 8" surface, large enough to hone even the largest chisels and plane irons in a figure-eight pattern or to lap your Japanese waterstones.

Vermont American Tool Company appears to have solved a finger-crushing problem for many craftsmen in a most unusual and inexpensive way. "Tak-Grip" nail holders, less than three inches long, allow the user to handle the smallest tack to a 6 penny nail in safety; this is surely a better idea than the needlenose pliers I had been using (until they broke). Speaking of breakage, the product features Vermont American's "Free Replacement Policy" which states that

"Vermont American tools must give the user complete satisfaction or be replaced free of charge." Now that's hard to beat.

New in the wood finishing line was Rustoleum Wood Saver for painting outdoor projects; it offers similar protection to wood that regular Rustoleum gives to metal.

Far more important than all the new stuff I saw at the show were a couple of attitude items, one of which is a quotation from Mr. William L. Davis, president of SKIL Corp., in his speech just before the magnificent SKIL press dinner: "The competitive spirit has been re-awakened in the American power tool business." Most of the innovations at the show were American, and of course, American power tools are recognized worldwide just as Japanese electronics and German automobiles are. Teacher/author Roger Cliffe was there looking for new ideas for his next book. Visiting with him was one of the highlights of my trip. Indeed, the other really important aspect of the show was the camaraderie and good will - renewing or initiating in-person, eyeball-to-eyeball contact with the people who are the power tool manufacturers, importers, and suppliers. **PW**

RYOBI TOOLS

Model	Qty	Price	Qty	Price
SS50A	3x5 1/2" Finish Sander	70	36	
US6200	Finishing Sand 1/2 Sheet	142	99	
87075	3x21" dustless Belt Sand	178	116	
87100	3x24" dustless Belt Sand	208	140	
8720A	4x24" dustless Belt Sand	269	165	
TS380	14" Miter Box	629	385	
W640	7 1/4" 13 amp circular saw	158	99	
W740	8 1/4" 13 amp circular saw	171	125	
JS60	Jig Saw-Single Speed	172	99	
JS650	Jig Saw-electronic v/speed	198	123	
R150	1 H.P. Plunge Router	138	99	
R331	2 H.P. Router	220	158	
R500	3 H.P. Router	265	163	
E3800	Drywall screwdriver 0-4000	126	79	
L120U	3 1/2" Planer	142	99	
801020ARK	3/4" 2-sp. Cordless Drill			
	w/Free holster-Xtra special buy	148	95	
TS2510	10" Miter Box	300	179	
SG1000	4 1/2" H.D. Mini-Grinder	99	59	

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MILWAUKEE TOOLS

Model	Qty	Price	Qty	Price
0224-1	1/2" drill 4.5A magnum	179	109	
0234-1	1/2" drill 4.5A magnum	179	112	
0244-1	1/2" drill 4.5A magnum	179	115	
0224-1	1/2" drill 3.3A 0-1000 rpm	165	99	
0228-1	1/2" drill 3.3A 0-1000 rpm	145	80	
0375-1	1/2" close quarter drill	195	115	
0210-1	1/2" cordless drill 2 spd.	195	115	
5359-1	cordless screwdriver 190 rpm	103	58	
0121-1	Pilbri n angle drill kit	295	175	
3002-1	Electrician's rt angle kit	290	170	
5399	1/2" D-handle ham drill kit	284	165	
1676-1	H.D. Hole Hawk w/cs	375	218	
6511	2 sp. sashall w/cs	207	110	
6405	8 1/4" circle saw	199	122	
6750-1	Drywall driver 0-4000	141	85	
6798-1	Tek screwdriver	173	105	
6226	2 sp. bandsaw w/cs	416	250	
6226	TSC bandsaw w/cs	416	250	
5507	TSC sashall w/cs	219	129	
6102	14" chop saw	349	209	
6010	Orbital sander 3 1/2" x 7 1/2"	179	100	
6014	Orbital sander 4 1/2" x 9 1/2"	189	108	
6305	6 1/2" cordless circle saw	239	134	
6753A	Drywall driver 3.5A	125	73	
8917	Var. temp heat gun	108	70	
0214-1	3/4" v. spd. cordless drill	209	125	
5397-1	3/4" v. spd. hammer drill kit	227	145	
0211-1	3/4" cordless driver drill	205	120	
0212-1	3/4" v. spd. cordless drill	229	125	
5371-1	3/4" v. spd. Hammer Drill Kit	313	199	
3107-1	1/2" v. spd. Rt. Angle Drill Kit	305	189	
1854-1	Super hole shooter-10A	530	350	
6232	4 1/2" bandsaw w/cs	452	275	
6747-1	Drywall driver 0-2500	141	85	
0230-1	3/4" drill 0-1700 rpm	165	100	
3300-1	1/2" v. spd. Magnam Rt. Angle Kit	279	180	
5620	Router 1 H.P. - 8 amp	289	175	
5660	Router 1 1/2 H.P. - 10 amp	299	180	
5680	Router 2 H.P. - 12 amp	350	220	
5455	7 1/2" polisher 1750 rpm	199	130	
5535	7" polisher 2800 rpm	209	140	
6215	16" chain saw	229	140	
8975	Heat gun	81	55	

6366	7 1/4" circular saw	187	105
6368	7 1/4" circular saw	216	125

Model 6366 includes CT blade, rip fence guide & blade wrench. Model 6368 includes all of the above plus case

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5 FOR 119

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3/4" Bore - Industrial Grade
CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen'l Purp. 10"	10"	60	68.58	34
LU82M010	Cut-Off 10"	10"	60	86.40	44
LU84M010	Combination 10"	10"	50	74.51	37
LU85M010	Super Cut-Off 10"	10"	80	118.88	62
LU72M010	Ripping 10"	10"	24	54.85	34
DS 306	6" Dado	6"	130	90.00	92
DS 308	8" Dado	8"	170	100.00	105
PS203	Gen'l Purp. 7 1/4"	7 1/4"	24	27	17.50
PS303	Plywood 7 1/4"	7 1/4"	40	33	20.50

MAKITA CORDLESS

Model	Qty	Price	Qty	Price
60B20DWK	3/4" Drill Kit 2 Spd Rev	178	91	
72 v		108	57	
6070DW	8 1/4" Var. Spd Rev 7.2v	180	102	
6010DW	3/4" Var. Spd Rev	189	102	
4300VAD	Jig Saw	189	99	
5081DW	3/4" Saw Kit	212	95	
5600DW	6 1/4" Circular Saw	284	125	
9035DW	Finishing Sander	168	73	
6010DWK	3/4" Cordless Drill Kit	174	88	
6010SDW	3/4" Cordless Drill	94	45	
8400DW	3/4" Hammer Drill	224	105	
DA3000W	3/4" Angle Drill	218	98	
6010DL	3/4" Drill w/Flashlight	188	89	
6012HDW	3/4" 2 spd Drill w/Flashlight	208	94	
DK1002	3/4" Drill w/Flashlight	176	90	
6710DW	Cordless Screwdriver Kit	176	84	

Model	Qty	Price	Qty	Price
7.2 Volt		40	27	
9.6 Volt		44	29	
10.8 Volt		99	65	

MAKITA TOOLS

Model	Qty	Price	Qty	Price
5007NBA	7 1/4" Saw w/Elec. Brake	186	114	
5008NBA	8 1/4" Saw w/Elec. Brake	212	130	
904510	Sander	92	43	
904510	3" x 21" belt sander	234	119	
9224B	3" x 24" belt sander	222	130	
9224B	3" x 24" belt sander w/bag	248	130	
9035	1/2" sheet finish sander	96	48	
9045H	1/2" sheet finish sander	186	90	
9045N	1/2" shi fin. sand. w/bag	190	105	
4200N	4 1/2" circ saw 7.5 amp	182	93	
5201NA	10 1/4" circ saw 12 amp	438	215	
4300BV	vsp jig saw 3.5 amp	234	117	
4301BV	orb vsp jig saw 3.5 amp	248	125	
JR3000V	2 spd recip saw w/cs	208	110	
JS3000V	vs recip saw w/cs	208	110	
LR1000	New 10" Miter Box	396	198	
9820-2	Blade Sharpener	288	159	
410	Dust Collection Unit	410	269	
3705	Offset Trimmer	218	115	
1900BW	3/4" planer w/cs	198	93	
1100HD	3/4" planer w/cs	328	160	
9207SPC	7" Sander-Polisher	250	140	
3619B	1 1/2" hp router	218	115	
3708B	1 1/2" hp trimmer	162	82	
9501B	4" Grinder Kit	119	55	
804530	6" Round Sander	98	48	
DA3000R	3/4" angle drill	212	129	
DP470	1/2" vsp wirew 4.8 amp	178	92	
HP1030W	3/4" v.s.r. hammer drill w/cs	168	88	
6300LR	1/2" angle drill wirew	268	152	
84988-7W	3/4" s.p. hammer w/cs	268	152	
2708W	8 1/4" Table Saw	348	196	
GV5000	Cord Sander	108	53	
6800DB	2500 rpm 3.5 amp	146	79	
6800DBV	0-2500 rpm 3.5 amp	156	89	
6801DB	4000 rpm 3.5 amp	146	79	
6801DBV	0-4000 rpm 3.5	156	89	
2030N	12" planer/jointer	2580	1475	
2940	15 1/2" planer	2160	1195	
1805B	15 1/2" planer kit w/cs	498	265	
JV1500	vsp speed orb jig saw	178	89	
JV2000	var. speed orb jig saw	198	100	
5005BA	8 1/4" circular saw	192	98	
5007NB	7 1/4" Circ Saw	158	94	
9503AB	4 1/4" sander-grinder kit	166	95	
4401NV	var/speed blower	168	79	
DP370	3/4" drill Rev. 0-1800 rpm	99	47	
6510LVR	3/4" drill Rev. 0-1500 rpm	144	65	
6013BR	1/2" Drill rev. 6 amp	208	100	
5402A	16" Circular Saw - 12 amp	542	315	
3612BR	3 HP Plunge Router	338	172	
9401	4x24" belt Sander w/bag	288	160	

Model	Qty	Price	Qty	Price
5510	(551) 5 1/2" Circ. Saw	130	83	
5625	(562) 6 1/2" Circ. Saw	164	108	
5650	(563) 7 1/4" Circ. Saw	164	108	
5665	(564) 8 1/4" Circ. Saw	185	118	
5750	(569) 7 1/4" Circ. Drop Foot	175	115	
5765	(568) 8 1/4" Circ. Drop Foot	204	130	
5790	(810) 10 1/4" Circ. Drop Foot	350	225	
5825	(367) 6 1/2" Worm Saw	252	135	
5865	(825) 8 1/4" Worm Saw	277	149	
3810	10" Miter Saw	349	169	
7565	Palm Sander	69	37	

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3/4" 12 Volt Professional Cordless 2-Speed
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6891DW Cordless Drywall
Screwdriver Kit 0-1400
R.P.M.-Li. weight - 2.9#
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3620 1 1/4" H.P. Plunge Router 7.8
amp-24,000 R.P.M.
complete w/cs

4302C Electronic Jig Saw orbital,
var. spd. 6 amp

5077B 7 1/4" Hypoid Saw
(similar to worm drive)
13 amp-4,300 R.P.M.

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CARBIDE TOOTH SAW BLADE
• Advanced saw blade technology. Exclusive
design out-performs regular carbide blades
• An excellent all-purpose blade

Model#	Diameter	#Teeth	List	Sale
73-756	6-1/2"	36	26.90	14.80
73-717	7-1/4"	18	11.72	6.45
73-737	7-1/4"	24	14.92	8.20
73-757	7-1/4"	40	27.40	15.10
73-758	8	40	39.90	21.95
73-759	8-1/4"	40	40.66	22.35
73-739	9	30	29.52	16.25
73-769	9	60	64.40	35.40
73-740	10	32	30.98	17.00
73-770	10	60	64.90	35.75

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476 Power Hammer (for do-it-yourselfers) 35 26

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88052 SP250 (2-1/2") 8.35

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SFN1 Finishing to 1 1/4" 349 269
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SN2 Sheathing - Siding, etc. 525 395
M2 All Purpose 440 330
SN4 Const. Framing, etc. 635 485
LS2 Moulding & Trim 325 259
LS4 Moulding & Trim 330 265

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PROFESSIONAL POWER TOOLS FROM PANASONIC
Model EY570B features
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2 speed - 350 low - 1000 high
highest torque - 143 in lbs 5 position
clutch 1 hour charger
complete w/cs - battery - charger
List Price 209.00 Special Sale 139.00

Model EY561B

Calendar

Events of Interest to Woodworkers

October 1-November 8, Seattle, WA

Northwest Invitational Showing of "Form! Function-Furniture." For more information contact Cheryl Peterson, Northwest Gallery of Fine Woodworking, 202 First Ave. S., Seattle, WA 98104 or call (206) 625-0542.

October 2-3, Du Quoin, IL

Woodland Expo Illinois '87, forest product equipment and machinery exposition at the Du Quoin State Fairgrounds. For more information contact Marie Malinauskas, Division of Continuing Education, Southern Illinois University of Carbondale, Carbondale, IL 62901-6705 or call (618) 536-7751.

October 10-12, Flemington, NJ

Flemington Crafts Festival at the Flemington Fairgrounds. For more information contact United Craft Enterprises, Box 326, Masonville, NY 13804 or call (607) 265-3792.

October 15-18, Boston, MA

National Lumber and Building Material Dealers Association's 71st Annual Convention at the Marriott Copley Place. For more information contact Jerry Walker, Director, NLBMDA, 40 Ivy Street SE, Washington, DC 20003 or call (202) 547-2230.

October 16-18, Minneapolis, MN

Twin Cities Woodworking Show at the Minneapolis Auditorium, Lower Exhibit Hall. For more information contact Irene Devine (213) 477-8521 in California or 1-800-826-8257.

October 16-18, Timonium, MD

11th Annual Maryland Crafts Festival at the Maryland State Fairgrounds. For detailed information send three stamps (66¢) for postage to: Deann Verdier, Director, Sugarloaf Mountain Works, Inc., 20251 Century Blvd., Germantown, MD 20874 or call (301) 540-0900.

October 16-18, Mesa, AZ

The National Working With Wood Show at the Centinal Hall in Mesa. For more information contact J. D. Productions, Inc., National Working With Wood Show, 467 Saratoga Avenue, Suite 110, San Jose, CA 95129 or call (408) 973-0447.

October 23-25, Tulsa, OK

3rd Annual Wonderful World of Wood Show at the Southroads Mall. For more information contact Charles Meeks, 2676 S. Richmond, Tulsa, OK 74114 or call (918) 742-4284.

October 23-25, Pittsburgh, PA

Pittsburgh Tri-State Woodworking Show at the Pittsburgh Convention & Expo Center, South Hall. For more information contact Irene Devine (213) 477-8521 in California or 1-800-826-8257.

October 23-25, Springfield, MA

Woodworking World, The New England

Show, at the Big E. For more information contact Christine E. Murphy at CDI Productions, P.O. Box 796, Rt. 3 & Cummings Hill Rd., Plymouth, NH 03264 or call (603) 536-3768.

October 23-25, Indianapolis, IN

The National Working With Wood Show at the Indiana State Fair Grounds in Indianapolis. For more information contact J. D. Productions, Inc. at (408) 973-0447. The National Working with Wood Show, 467 Saratoga Avenue, Suite 110, San Jose, CA 95129.

October 27-30, New Orleans, LA

The Woodworking Machinery Distributors' Association will sponsor a convention at the Royal Sonesta Hotel in New Orleans. For more information contact R. Franklin Brown, Jr., Bits 'n Chips, Adams Building, Suite 109, 251 West DeKalb Pike, King of Prussia, PA 19406 or call (215) 265-6658.

October 30-November 1, Charlotte, NC

Woodworking World, The Carolina Show at the Charlotte Civic Center. For more information contact Christine E. Murphy, CDI Productions, P.O. Box 796, Rt. 3 & Cummings Hill Rd., Plymouth, NH 03264 or call (603) 536-3768.

October 30-November 1, Detroit, MI

Metro-Detroit Woodworking Show at the Michigan Fairgrounds. Community Arts Bldg. For more information contact Irene Devine, (213) 477-8521 in California or 1-800-826-8257.

November 1-7, Athens, GA

The NAWLA Wood Market Seminar, fall semester, at the University of Georgia at Athens. For more information contact Guy MoDrak, North American Wholesale Lumber Association Inc., Suite 680, 2340 S. Arlington Heights Rd., Arlington Heights, IL 60005 or call (312) 981-8630.

November 6-8, Syracuse, NY

The Central New York State Show at the New York State Fairgrounds. For more information contact Christine E. Murphy, CDI Productions, P.O. Box 796, Rt. 3 & Cummings Hill Rd., Plymouth, NH 03264 or call (603) 536-3768.

November 6-8, Fresno, CA

A weekend workshop on Design and Woodworking Techniques by Art Carpenter. For more information contact Mark R. Webster, 670 N. G St., Porterville, CA 93257 or call (209) 781-4074.

November 7, Columbia, MO

Midwest Woodworkers Association announces its 5th Annual Show and Sale at the National Guard Armory. For more information contact Gary Straub or Danny Roberts,

P.O. Box 7093, Columbia, MO 65201.

November 7-8, Belleville, IL

The Belleville Wood Carvers Club is sponsoring its 17th Annual Midwestern Wood Carvers Show at the Belle-Clair Exposition Hall. For more information contact Don Lougeay, 1830 East D St., Belleville, IL 62221 or call (618) 233-5970.

November 13-15, Portland, OR

The Oregon Woodworking Show at the Memorial Coliseum Complex, Convention Hall. For more information contact Irene Devine (213) 477-8521 in California or 1-800-826-8257.

November 14-15, King of Prussia, PA

Philadelphia Valley Forge Crafts Festival at the Sheraton Valley Forge Convention Center. For more information contact United Craft Enterprises, Box 326, Masonville, NY 13804 or call (607) 265-3792.

November 19-December 31, Seattle, WA

1987 Box Competition and Container Show. For more information contact Cheryl Peterson, Northwest Gallery of Fine Woodworking, 202 First Avenue South, Seattle, WA 98104 or call (206) 625-0542.

November 20-22, Richmond, VA

12th Annual Richmond Craft Show at the Richmond Exhibition Centre. For more information contact Paula Hovde or Linda Smalley, Hand Workshop, 1812 West Main St., Richmond, VA 23220 or call (804) 353-0094.

November 20-22, Gaithersburg, MD

12th Annual Autumn Crafts Festival at the Montgomery County Fairgrounds. For detailed information send three stamps (66¢) for postage to: Deann Verdier, Director, Sugarloaf Mountain Works, Inc., 20251 Century Blvd., Germantown, MD 20874 or call (301) 540-0900.

November 20-22, Seattle, WA

Western Washington Woodworking Show at the Seattle Center, Exhibition Hall. For more information contact Irene Devine, (213) 477-8521 in California or 1-800-826-8257.

November 21-22, Anaheim, CA

The National Working With Wood Show at the Anaheim Convention Center, Pacific Room. For more information contact J.D. Productions, Inc. at (408) 973-0447. The National Working With Wood Show, 467 Saratoga Avenue, Suite 110, San Jose, CA 95129.

November 21-22, Rochester, NY

Rochester Crafts Festival at the Riverside Convention Center. For more information contact United Craft Enterprises, Box 326, Masonville, NY 13804 or call (607) 265-3792.

November 27-29, Ashland, OR
8th Annual Exhibition of Fine Woodworking at the Shakespeare Great Hall. For more information contact Tom Phillips, Siskiyou Woodcraft Guild, 60 Fifth St., Ashland, OR 97520 or call (503) 482-4829.

November 27-29, Harrisburg, PA
"Christmas '87 Art & Craft Spectacular" at the Pennsylvania Farm Show Building. For more information contact United Craft Enterprises, Box 326, Masonville, NY 13804 or call (607) 265-3792.

November 28-29, Arlington, VA
"Artistry in Wood," 13th Annual Woodcarving Show at the Marymount University. For more information contact Show Coordinator, Northern Virginia Carvers, P.O. Box 524, Oakton, VA 22124 or call (703) 790-1034.

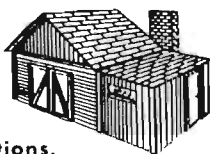
December 4-6, Pomona, CA
Southern California Woodworking Show at the Los Angeles County Fairgrounds. For more information contact Irene Devine, (213) 477-8521 in California or 1-800-826-8257.

December 4-6, Syracuse, NY
"Christmas '87 Art & Craft Spectacular" at the New York State Fairgrounds. For more information contact United Craft Enterprises, Box 326, Masonville, NY 13804 or call (607) 265-3792.

December 5-6, Anaheim, CA
Juried 8th Annual Christmas Wood Fair. Applications will be accepted until October 31. For more information contact Janice Slife, P.O. Box 31, Anaheim, CA 92805 or call (714) 772-5444.

December 15, Houston, TX
Applications now being accepted through December 15 for the juried 1988 Houston International Festival Crafts and Arts Exposition held April 9-17, 1988. For more information contact Barbara Metyko, The Houston International Festival, 2 Houston Center, 909 Fannin, Suite 890, Houston, TX or call (713) 654-8808.

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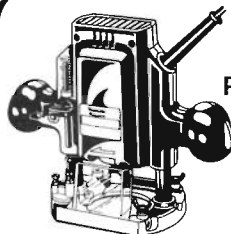
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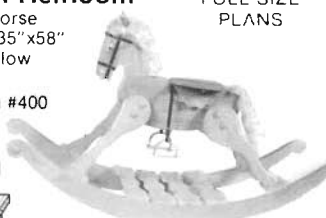
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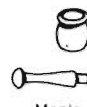
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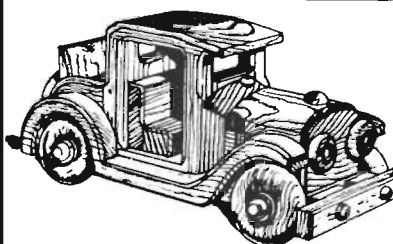
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About the Shows continued from page 18

you should send some photos of products with your application. Instead of *having* a planned deadline for a particular show, applicants are accepted any time and put on a waiting list. Tracy Beckman says there is usually a 2-3 show wait after your application has been accepted.

In 1988 the Rosen Agency will add a third show to the two major trade events they sponsor. "Buyers Markets of American Crafts" held in Valley Forge and Boston will be joined by the "Anaheim Buyers Market" which overlaps one day of the Beckman Gift Show. This new show will take place July 22-24, 1988 in the Anaheim Convention Center in California. Their Valley Forge show will be held February 13-17, 1988 in the Valley Forge Convention Center in King of Prussia, Pennsylvania and their Boston show will be on June 19-21 at the Bayside Expo Center. Rosen Agency shows are for wholesale

buyers only and book craftsmen who want to focus more on the wholesale aspect of marketing. Booth fees for these shows begin at \$525 for an 8' X 10' space. For more information contact the Rosen Agency, Mill Centre, Suite 300, 3000 Chestnut Ave., Baltimore, MD 21211 or call (301) 889-2933.

The Pennsylvania Guild of Craftsmen is an umbrella organization for many local chapters of associations representing a variety of crafts. Each year they sponsor the Pennsylvania State Crafts Fair on the campus of the Franklin and Marshall College in Lancaster, Pennsylvania. In the past, the first day of this event had been set aside as a wholesale day. Their more recent approach has been to make all days wholesale/retail days. They mail information to potential wholesale buyers to identify sellers and their wholesale policies. To participate in the Crafts Fair you must first become a Guild member. You do not have to be a Pennsylvania resident to join the Guild; their membership

fee is \$30. Once you have been a member for a year you can apply for juried status; upon approval you are then eligible to sell at the fair. In 1988 the event will take place on August 4-7. For more information contact the Pennsylvania Guild of Craftsmen, P.O. Box 820, Richboro, PA 18954 or call (215) 860-0731.

At press time the New England Buyers Market had not determined their show dates or location for 1988. This show, sponsored by Multi Management Corporation in conjunction with the New England Crafts Council, is limited to New England Craftsmen, although the buyers come from all over. Five slides are required for potential sellers to have their work juried, but once you've been a participant for two years you are granted tenure and no longer have to go through the jury process. For more information contact New England Buyers Market, One Faneuil Hall Market Place, Boston, MA 02109 or call (617) 367-3130. **PW**

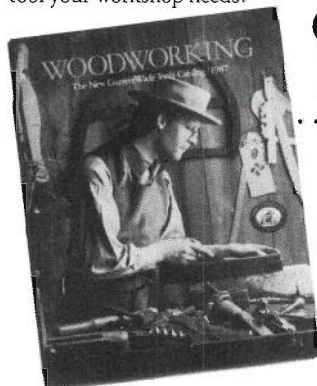
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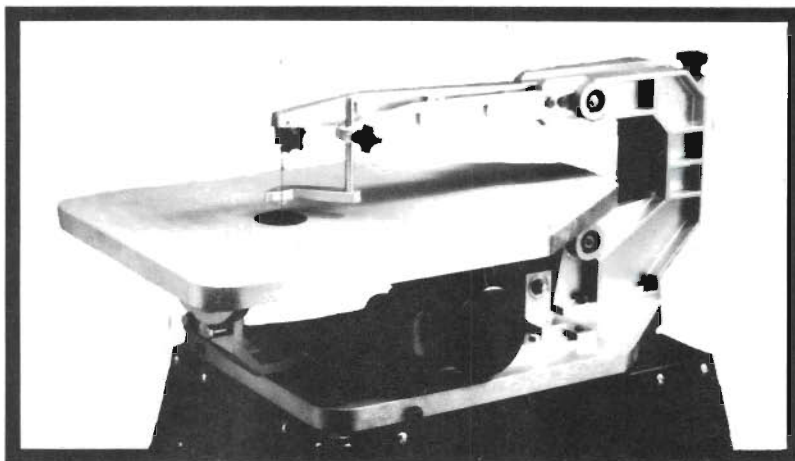
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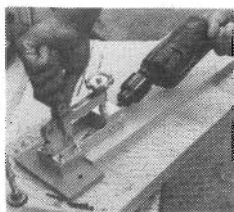
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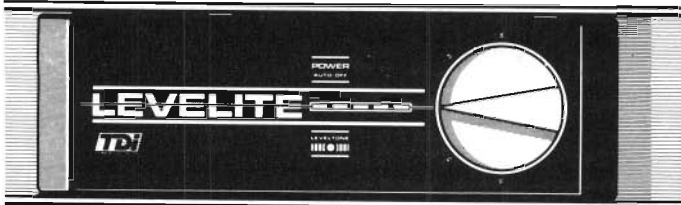
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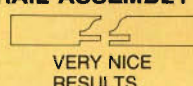
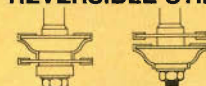
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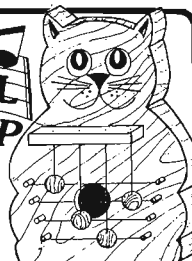
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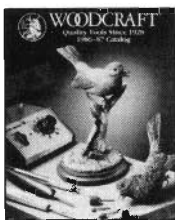
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1. You measure a board and cut it, only to find it's too short. What do you do?

- (a) Cut the same board again - this time to the right length.
- (b) Return your tape to the hardware store and exchange it for one that measures correctly.
- (c) Use the board for firewood.
- (d) I've never cut a board too short in my life.
- (e) Save the board and use it for another project.

2. Which of the following is not a determining characteristic of Contemporary furniture?

- (a) Functionality
- (b) Simplicity
- (c) Informality
- (d) Has Smurfs painted on the side

3. Which of these is the first rule of design?

- (a) "Form follows function."
- (b) "We will sell no wine before it's time."

4. You're building a project and come up one 2 × 4 short. It's Sunday, and the lumberyard is closed. What do you do?

- (a) Nail two 1 × 4's together.
- (b) Take a stud from one of the walls in your house and use it.
- (c) Cut down the spruce tree in your back yard and make a 2 × 4.
- (d) Wait until the lumberyard opens on Monday and get your 2 × 4 then.

5. Plywood is sold by the:

- (a) Square foot
- (b) Cubic centimeter
- (c) Metric ton
- (d) Kilowatt
- (e) None of the above

6. What is a kerf?

- (a) What you do when your project doesn't come out square.
- (b) A peasant farmer.
- (c) The incision made by a saw blade into a piece of wood.

7. Which of the following are uses for bar clamps?

- (a) Clamping your drink to the bar so you won't spill.
- (b) Assembling solid lumber slabs.
- (c) Assembling frames.
- (d) Both (b) and (c).

8. Who was Duncan Phyfe?

- (a) Barney Phyfe's younger brother.
- (b) A famous builder of Traditional furniture in the 18th century.
- (c) A man who couldn't spell fife.
- (d) Barney Phyfe's evil twin.

9. Which two of the following planes are not commonly used in woodworking?

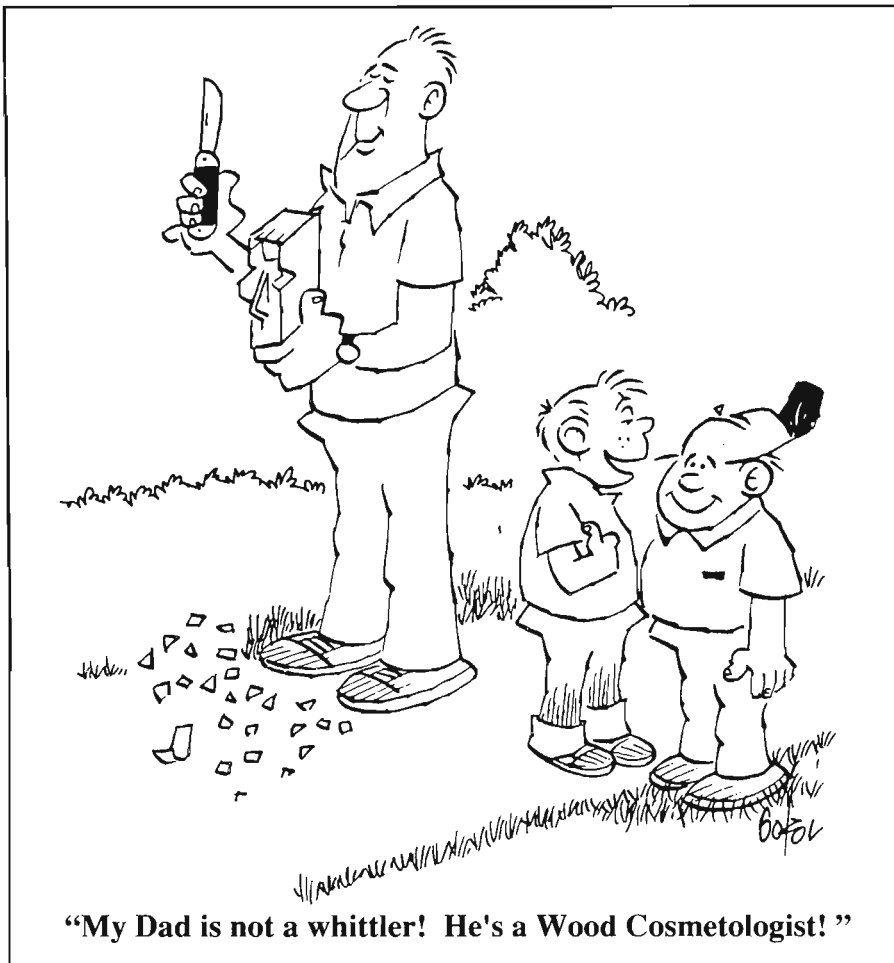
- (a) The block plane
- (b) The jack plane
- (c) The jill plane
- (d) The jointer plane
- (e) The Boeing 727

10. You are assembling a solid table top using edge-to-edge joints. How do you reduce warpage?

- (a) Alternate the direction of the annual rings from piece to piece.
- (b) Have your girl friend sit on the table top until the glue dries.
- (c) Both (a) and (b) are correct.
- (d) Only (a) is correct. My girl friend weighs too much and would crush the table top.
- (e) I don't have a girl friend.

11. You are building a project and have a question on how to proceed. Which of the following sources would you refer to?

Curt Mobley is: (a) a woodworker (b) from Laramie, Wyoming, (c) all of the above.



- (a) *Roget's Thesaurus*
 (b) *Shoveling Sawdust for Fun and Profit*
 (c) *Rolling Stone*
 (d) The plans for the project you're working on

12. You need to joint the edge of a piece of narrow stock on the jointer. What do you do to make the process safer?

- (a) Have your little brother do it.
 (b) Give up woodworking.
 (c) Use a push block.

13. What is kickback?

- (a) What your wife does when you promise to take her shopping but work on your woodworking project instead
 (b) An object specifically designed for woodworkers to kick when they cut their miters backwards or cut their boards too short
 (c) When wood binds in the saw and is shot back with great velocity

14. (True or False) If you need to sand with a sheet of 100-grit sandpaper but have none, use two sheets of 50 grit.

SCORING:

One point for each correct answer.

- | | |
|------|------------|
| 1. e | 8. b |
| 2. d | 9. c and e |
| 3. a | 10. a or d |
| 4. d | 11. d |
| 5. e | 12. c |
| 6. c | 13. c |
| 7. d | 14. False |

If you scored 12 to 14 points:

You are an experienced craftsman and a true woodworking genius.

8 to 11 points:

Although you have mastered many of the fundamentals of woodworking, you are not yet an experienced craftsman nor a true woodworking genius.

4 to 7 points:

You're still a struggling novice.

0 to 3 points:

You have picked up this magazine by mistake thinking it was *Playboy*. **PW**

It's a...It's a...It's a...

by Grover Brinkman

Of all the creations Gary Simmons of Bluford, Illinois, has exhibited, this one commands the most attention.

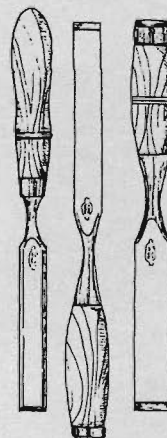
"What is it?" you ask. Isn't it obvious? Haven't you ever seen an imprisoned wood ball before? It fits inside what was once a solid block of pine 4' long and 10" square. The ball is round and totally free inside the hourglass block of wood. When tilted, the ball moves up and down. This wooden oddity required only a pocketknife, a small chisel, and a lot of patience. It is the result of a year's worth of evenings when TV lost its lustre. YOU, therefore, had better keep the tube turned on. Who knows what kind of creation may emerge from your spare wood? **PW**

Grover Brinkman is a writer/photographer from Columbia, Illinois, who is never quite sure what looms ahead at the next turn in the road.



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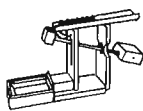
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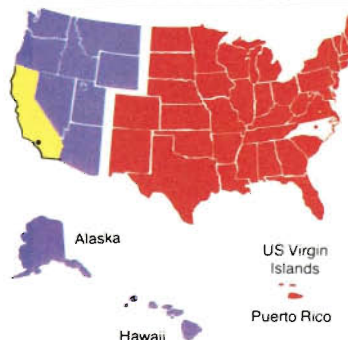


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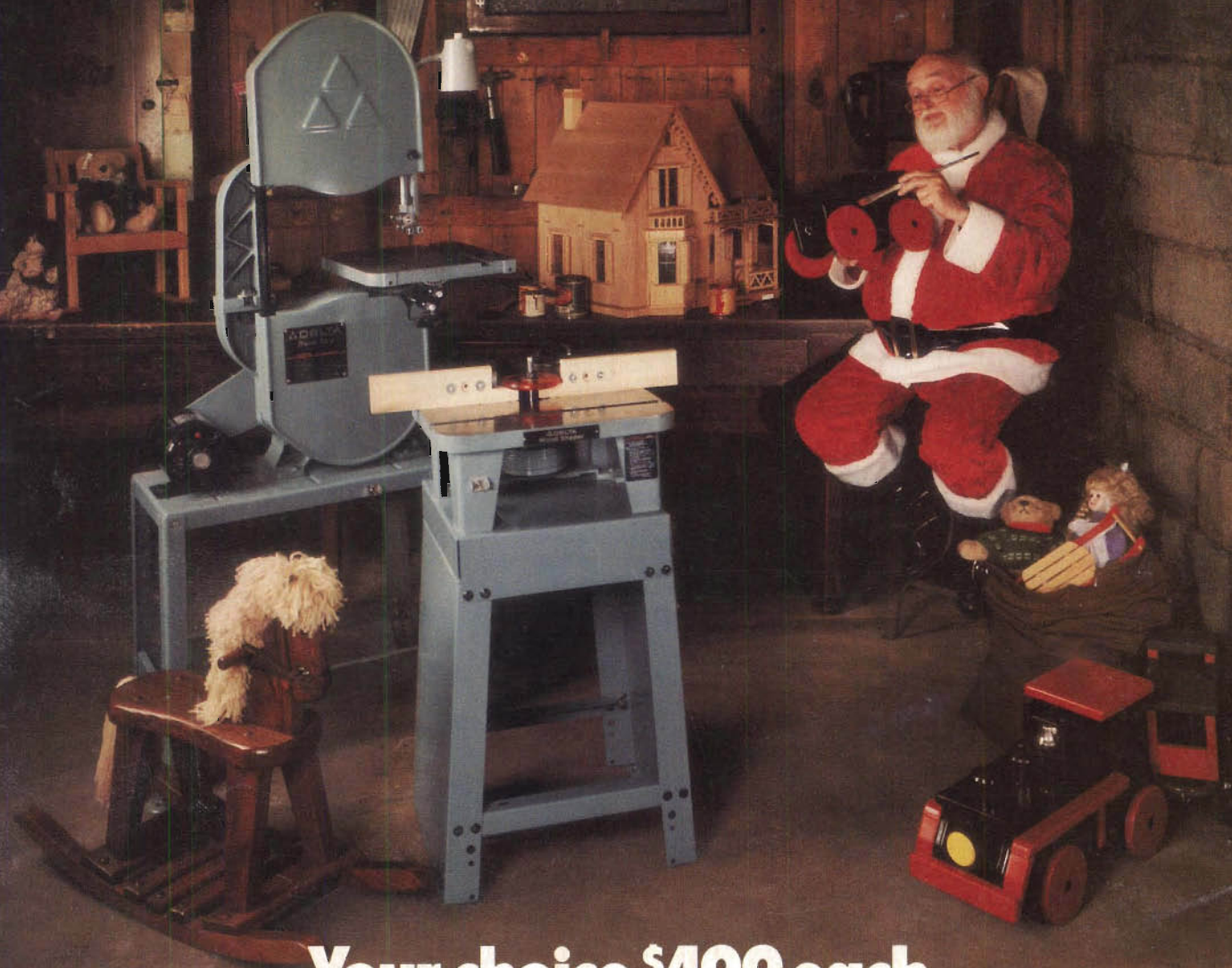
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If you've been good all year, you

deserve a reward. So start dropping hints to Santa right now. And if you're *still* having trouble making your decision, at this price you just might want to choose both.

Call toll-free for the name of your Delta dealer. Delta International Machinery Corp., 800/438-2486 (in PA, 800/438-2487).

Offer good only on purchases from participating dealers in the continental U.S., Alaska, and Hawaii, from September 1 until December 31, 1987.

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